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ORIGINAL ARTICLES.

CONTRIBUTIONS TO THE DIAGNOSIS OF YELLOW FEVER.[1]

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IT seems at first sight incredible that after three hundred years of study of yellow fever, a dozen physicians can not be found in any city holding the same opinion in regard to its true nature and treatment. Even in places where this disease is endemic, and has been known for over a hundred years in uninterrupted succession, there also exists a variety of opinion among practitioners. Probably there is no medical society that has paid more attention to the subject than the Academy of Medical, Physical, and Natural Sciences of Havana, Cuba,—an unpretentious scientific body, full of good faith and disinterested love of science—yet, I believe it would be difficult to find among its members half a dozen sustaining exactly the same opinion in regard to all the phases of yellow fever.

The maxim of Dutroulau—that in this disease it is necessary to see a great deal in order to see correctly, ought to be supplemented by adding that it is necessary at the same time to take very minute clinical notes in order to see intelligently, for all epidemics do not bear the same characteristics, and even all the cases of the same epidemic do not present the same symptoms; there are epidemics so malignant that for a person to fall sick is equivalent to die, in spite of all kinds of treatment, while there are others so benign that even expert diagnosticians confound many cases with other diseases possessing very analogous symptoms. In fact, a typical case of yellow fever, as it is described in the text-books, is very rare; hence the difficulty of the diagnosis.

It suffices to see but a few yellow fever patients to become convinced that this formidable malady constantly presents two distinct stages. The first is a short one, lasting no more than three days, generally called "the stage of reaction;" the second is that of defervescence and decomposition of the blood, known as "the stage of calm," and lasting from a few hours to two weeks, according to the form and character of the epidemic. When the case terminates happily during the first stage, the second is marked only by the beginning of its evolution in convalescence. The more rapidly the two stages succeed one another the more dangerous the case, and *vice versâ*.

In places where yellow fever is endemic, the character of each summer's appearance depends on the telluric, climatological, and hygienic conditions of those places, especially the velocity and direction of the prevailing winds at that time. It is worthy of attention in this regard, the explanation given by Hippocrates of "medical constellations," or atmospheric conflicts, as the pathogeny of epidemic diseases,—a *quid occultum* developed in the atmosphere of certain foci of infection as the sum total of a series of coefficients.

The epidemic forms of uncomplicated yellow fever may with advantage be divided into *ephemeral*, *adynamic*, and *ataxic*. In the ephemeral form the patients suffer the general prodromata of the disease—fever, headache, pain in the back and lower limbs, nausea, epigastric discomfort and tenderness on pressure, etc.—but the fever does not exceed 103°, and lasts only two or three days; vomiting is rare, and if it occurs, it is of a bilious character; the mind is perfectly clear, with no other disturbance of the nervous system than the anxious expression of the face. In this form we have the nearest approach to bilious remittent fever, and in places where yellow fever is endemic it constitutes the so-called "acclimatization fever." The patients usually get well in about seven days. In the adynamic form predominate all the symptoms of decomposition of the blood. It always breaks in suddenly with a chill from the hours of six o'clock in the evening to six in the morning, followed by high fever (over 103°), a sense of weight in the head, besides the cephalalgia; the pain in the lumbar region extends around the waist as if having a tied belt, gurgling in the right iliac fossa distinctly perceptible; there is a mahogany coloration of the face and chest; tongue slightly coated, red at the tip and edges; bowels constipated; lessened quantity of urine, highly colored and albuminous; the sclerotic has an icteric tint under the inferior eyelid after the first day of the attack; without much retching altered blood or "black vomit" is ejected, although this symptom has not, in this form of the disease, the great pathognomonic importance generally attributed to it. The febrile signs increase toward evening and lessen toward morning, but do not distinctly remit until the third day. This form is always grave, and when death occurs in the second stage it generally takes place from the seventh to the fourteenth day. In the ataxic form predominates the nervous depression. It is always very grave and rapid in its course, the second stage almost immediately following the first, giving rise to those fulminant cases lasting only forty-eight hours, so common in Vera Cruz, and known to the French physicians as "*coup de barré*," or stroke of the bar, on account of the suddenness and intensity of the pain across the loins. In this

[1] Read before the Orleans Parish Medical Society, New Orleans.

form the "black vomit" is always present, and sometimes also hemorrhage from other situations; there are disquietude, delirium, hiccough, photophobia, and once in a while amaurosis, ischuria, and finally collapse or convulsions. Death generally takes place on the fourth or fifth day. It is of good omen if the patient outlive the seventh day.

Yellow fever, however, does not at every appearance and in all localities present exactly the same group of symptoms; for not only the constitution and the peculiar variations in the state of the individual exert a modifying influence, but also the meteorological conditions and the diseases prevailing at the time. The recognition of this dreadful disease, nevertheless, speaking in general terms, is easy. Whenever, during the summer, we are called to see a patient suddenly taken sick with one paroxysm of cold, which occurred when the sun had disappeared from the horizon, followed by rapidly rising fever (102°, 103°, 104°), and accompanied by headache, pain in the back and lower limbs; the face flushed with an anxious expression, and the eyes brilliantly injected and watery; hurried breathing; the stomach very irritable, with great epigastric discomfort and tenderness on pressure, nausea, and anorexia; the tongue moist, slightly coated, sometimes red at the tip and edges, yet otherwise natural; bowels constipated, gurgling in the right iliac fossa; lessened quantity of urine, darker in color and albuminous; general muscular debility; pulse rapid, strong, tense, sometimes dicrotic, with from 90 to 120 pulsations to the minute; skin hot, dry and harsh, and all this without a previous history of yellow fever; then we may unhesitatingly pronounce the disease yellow fever in its incipiency.

Peculiarities of the General Symptoms.

APPEARANCE OF THE FACE AND EYES.—Besides the hyperæmia of the face and conjunctiva, and the anxious expression of the countenance, there is always a mahogany coloration of the skin on the forehead, temples, *alæ nasi*, cheeks, and sometimes also at the sides of the neck and front part of the chest—this is called by some authors "the mask" of yellow fever. In an elaborate monograph of Dr. Juan Santos Fernandez, of Havana, Cuba, on the loss of sight in yellow fever, translated by me from the Spanish original,[1] this distinguished oculist calls attention to the hyperæmia of the eyes and the dilatation of the pupil, which in some cases is so marked that it gives to the face a vague and indefinite expression, very similar to that assumed by a drunken man. In the second stage the redness and brilliancy of the eyes diminish, and the rosy color of their tegumentary covering gives place to an icteric tint several hours before the discoloration of the skin is noticeable. Some practitioners pretend to find a direct relation between the intensity of the coloration of the conjunctiva and the severity of the attack, and others, more correctly in my opinion, base the differential diagnosis between yellow fever and malarial fevers on the absence of hyperæmia of this mucous membrane in the latter.

[1] Knapp's Archives of Ophthalmology, vol. x. No. 4, Dec. 1881.

PULSE AND TEMPERATURE.—The action of the heart and the state of the blood and arteries, as revealed by the pulse in the first stage of yellow fever, are symptomatic of pulmonary engorgement, and this sudden afflux of blood is due, in my opinion, to the damping out of the portal circulation by the deranged liver. During the first two days the pulse is accelerated, with 90 to 110 pulsations to the minute, full and resisting, but at the commencement of the fourth day it changes completely—if the patient really enters in convalescence, the pulse is soft, rhythmical, and natural; but if this deceptive remission of the febrile symptoms is only the transition of the first to the second stage, the pulse shows a marked tendency to disappear, beating threadlike, so slowly as forty-five times, or even less, a minute in unfavorable cases.

Respecting the temperature in yellow fever, we possess the valuable observations of Dr. Joseph Jones, of New Orleans,[1] stating as the result of many investigations, that the maximum elevation of temperature is attained upon the first, second, and third days of the disease, ranging from 102° to 110°; from the third to the fifth it steadily falls, and sinks to the normal standard or below it, to rise again in some fatal cases in the stage of collapse, though it never attains the high temperature characteristic of the first stage.

HEADACHE.—The cephalalgia of yellow fever is aggravating and astrictive, but, as a general rule, never pulsatile. Its prime characteristic is its seat, which is over the eyes, and seems to affect all the muscles of the ocular apparatus supplied by the third pair of nerves, principally the internal rectus muscle. Any movement of the eyeball, or a little pressure on the closed eyelids causes great discomfort.

PAIN IN THE BACK AND LEGS.—The seat of the pain in the back is the lumbar region, and it seems as though it irradiates from the renal plexus. The pain in the legs is located in the upper part of the calf near the popliteal space, and in severe cases it follows the course of the great sciatic nerve, the patient feeling the pain in the pubes twenty-four hours before death takes place.

THE BLACK VOMIT.—The hemorrhages of yellow fever appear in the second stage, except in the *coup de barré* cases of the ataxic form, in which the two stages are almost blended into one. The blood is viscous, more fluid than natural, and little or not coagulable at all, owing to the loss of fibrin; it exudes from the mucous membrane of the mouth, the nose, the anus, the vagina, and sometimes it comes out also through the ears and eyes.

There are some cases in epidemics of the ephemeral and adynamic forms in which the black vomit is absent, and this so-called "unmistakable pathognomonic symptom" is therefore misleading. Vomiting certainly occurs either spontaneously or provoked by anything taken into the stomach, but the matter ejected has a bitter taste to the patient and all the aspect of bilious and mucous matter

[1] American Practitioner, Sept. 1873, and cited in Nouveau Dictionnaire de Médecine et de Chirurgie.

combined, but by no means the characteristic coffee-ground appearance of true black vomit.

In the ataxic form the black vomit is always present, not very frequent or very abundant either, generally one or two a day only. It sometimes happens that just at the moment of dying the patient has one paroxysmal vomit of altered black blood and then dies.

THE URINE.—The great peculiarity of this secretion is its constantly acid reaction. Another diagnostic characteristic, as we all know, is the presence of albumen, which, according to Dr. Vidaillet,[1] can be detected twenty-four hours after the onset of the attack by holding a few grammes of the urine in a test-tube, and letting five or six drops of nitric acid run along the interior of the tube, when almost immediately appears a whitish zone dividing the column of urine in two parts, the upper one retaining the same appearance it had before, while the lower assumes a reddish tint. This opaline zone is called by Dr. Vidaillet "the premonitory ring," which he claims is infallibly present in all cases of yellow fever during the second and third days, disappearing entirely during the second stage, when the column of urine divides into two distinct portions on the addition of nitric acid, no matter how carefully poured in. The premonitory ring is soluble in an excess of acid.

In severe cases, when the quantity of albumen has been constantly increasing, epithelial cells and bile are found in the urine, but during the first and second days of the disease, neither tube-casts nor pavimentary epithelium can be detected.

CASE OF PISTOLSHOT WOUND OF THE ABDOMEN, IN WHICH LAPAROTOMY WAS RESORTED TO.[2]

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H. W. L., aged about thirty-three, was admitted into the Pennsylvania Hospital, at about 1 A. M., February 10, 1887. He had shortly before been shot in the abdomen, with a ball from a pistol of the calibre known as 38, in the hands of a man much taller than himself, who was standing directly in front of him.

At the time of his admission he presented symptoms of marked, although not profound, collapse. His temperature was 97.5°; his pulse 120; his breathing apparently normal (not counted). When I saw him, at about 1.45, he had reacted in some degree; there had been some vomiting of food with a slight admixture of blood.

The bullet had entered the abdomen about two inches to the left of the umbilicus, and about half an inch below. Laparotomy was at once decided upon, and in its performance I had the advantage of the counsel and assistance of my colleagues, Dr. Hunt and Dr. Morton. Antiseptic precautions were, of course, strictly adhered to throughout.

The wound was first enlarged sufficiently to ascertain the fact that the cavity of the peritoneum had been penetrated, and that hemorrhage had taken place within it. A careful division of the abdominal wall was now made, from the umbilicus to just above the pubes. A catheter was introduced into the bladder, and a small quantity of clear urine was drawn off. The peritoneal cavity was irrigated with a solution of mercuric bichloride (1: 15,000), and the intestines systematically drawn out and examined. Eleven wounds were found, at various portions of the small intestine, one just at the ileo-colic junction. These wounds were all more or less ragged, and varied considerably in size. Lembert's suture, with fine chromicized catgut, was employed; the needle used was straight, and three-sided.

At one point the bullet had torn its way through the bowel, making two large ragged holes directly opposite one another. Here about one inch of the gut was cut away, with a V-shaped portion of mesentery. The edges of the gap thus left in the mesentery were sewed up separately, and then carefully apposed by single sutures. The cut edges of the bowel were brought together, and the Lembert suture used as in the other rents. I did not cut away any of the ragged edges of the wounds, but was careful to apply the sutures so that sound tissues only were placed in contact. No escape of fecal matter seemed to have taken place into the cavity of the peritoneum. At one point the omentum was torn and bleeding; it was caught up and included in a ligature. During the operation, which was necessarily very prolonged, the patient's general condition was for the most part fairly good. At one time the pulse fell alarmingly, but came up very promptly upon the irrigation of the peritoneal cavity with hot water. Very little bleeding was at first perceived, although some large clots were scooped out of the pelvic cavity; but we hoped these had accumulated by the oozing from the wounds above. When, however, the last part of the bowel was reached, fresh clots were found, and it was evident that free hemorrhage was going on at some point. This point became suddenly apparent on the right side of the pelvis at its upper part, where from an oval aperture there was a rapid gush of dark fluid blood, with some pulsatile movement. The tissues bordering this aperture were immediately transfixed with two tenacula at right angles to one another, and a ligature firmly applied. No more bleeding occurred.

The peritoneum was carefully cleansed, the intestines and omentum replaced, and the wound closed with silkworm gut sutures, the edges of the peritoneum being adjusted with special care. A rubber drainage-tube was placed in the wound, which was dressed very much as in a case of ovariotomy. The patient was then, at 4.30 A. M., very gently and cautiously transferred to his bed, with hot-water bags placed around him. His condition was, considering everything, good.

During the latter part of the operation several hypodermatic injections of whiskey were given, and

[1] Archives générales de Médecine, extracted from the Archives de Médecine navale.

[2] Read before the Academy of Surgery of Philadelphia, March 7, 1887.

seemed to have an excellent effect. Only very slight after-effects ensued from the prolonged anæsthesia. Brandy and morphia were given rather freely, until 9 A. M., when champagne was substituted, and gr. x of quinine sulphate were given by suppository. As his pulse flagged, he had a hypodermatic injection of ♏x of tr. of digitalis every hour. He, however, steadily sank, although his mind was clear, and he was able to make an intelligent statement as to the manner in which he received his wound. At about noon his temperature began to rise, and at 3 P. M., it was 103.6°. At 5 P. M., the abdominal cavity was washed out by a stream of distilled water, at 110°, passed through the drainage-tube. The effect was good, but only for a short time. His pulse increased in force, his respirations became less shallow, and the tone of his skin improved. Soon, however, he again sank, and died at 6.45 P. M., about eighteen hours after the shooting, and about fourteen hours from the conclusion of the operation.

At the autopsy, eighteen hours after death, the abdomen only was examined. There were some evidences of peritonitis in slight coating of lymph on the serous surfaces, and some adhesion of the intestinal coils to one another. No wounds were found except those that had been sutured, although most diligent and systematic search was made. The intestinal tube was carefully removed, and a current of water made to distend it. Everything held until an extreme degree of pressure was reached, the whole tube being dilated excessively, when one of the sutures close to the border of the mesentery gave way. For practical purposes, the closure had been efficient. There had been no more bleeding. The wounded vessel was found to be the external iliac vein, just beneath Poupart's ligament. Beyond this, along the thigh, there was a track full of blood, along which the bullet had passed to its final resting-place close to the femur. It was very slightly furrowed by contact with the bone.

REMARKS.—Notwithstanding the fatal issue of this case, it seems to me by no means unsatisfactory in the retrospect; and it certainly presents some interesting and instructive points, to which I desire very briefly to call attention.

Although the operation failed to save the man's life, it did in the opinion of all who saw the case prolong it. The man was able to make a clear statement as to the way in which his injury was received, and could have attended to affairs of importance if it had been needful for him to do so.

Laparotomy for penetrating wounds of the belly belongs, of course, to the antiseptic or most recent period of surgery. It was dimly foreshadowed, however, as long ago as 1855, by Guthrie,[1] who says:

"When it is obvious, from internal hemorrhage, or from the discharge of fecal matter, or from the introduction of the finger, by which it can be felt, that a large hole or rent has been made in an intestine, the wound should then be enlarged so as to allow its being brought into sight, when the edges should, if required, be smoothed, and the continuous suture applied in the manner directed, Aph. 391."

Dr. Hunter McGuire, in an address on "Operative Interference in Gunshot Wounds of the Peritoneum," read before the American Medical Association, in 1881, urged that "the wound in the abdominal wall should be enlarged, or the linea alba opened, freely enough to allow a thorough inspection of the injured parts." In a foot-note he refers to the fact that he had advocated the same idea in 1873, before the Virginia Medical Society.

Otis, in the surgical volume of Part II. of the *Medical and Surgical History of the War of the Rebellion*,[1] published in 1876, expresses the opinion that "it appears probable that laparotomy . . . will henceforward be employed with increasing frequency, not only in the treatment of morbid growths, but in obstructions and wounds of the abdominal organs."

Dugas, in the same year, very distinctly and clearly laid down before the Surgical Section of the International Medical Congress the exact course pursued in the case I have reported,—a course which by antiseptic precautions is now rendered far safer than it was when he had the courage to recommend it.

McGuire, in the paper above quoted, refers to Otis and Dugas as having advocated "the suggestion of Legouest for operative interference in intestinal wounds." Legouest, however, can scarcely be considered as the pioneer in this bold advance, unless the following expression is very liberally construed:

"It is always to be feared, in gunshot wounds of the intestine, that one of the perforations may escape the search of the surgeon; hence it is proper to enlarge the wound in the abdominal wall, to draw out the portions of intestine in which the finger perceives evidence of damage, and to stop only when the investigation has reached its utmost limit."[2]

This is going very little farther than the position reached by Guthrie, eight years previously; and to neither of these eminent surgeons did the brilliant idea of abdominal section, properly so-called, suggest itself.

Legouest, in the passage just quoted, touches a question which has always been in my mind in reference to the closure of gunshot wounds of the intestines, and especially since the practice of laparotomy in these cases has assumed its present aspect; and that is as to the possibility of being sure that all the damaged points have been found and secured. The case now reported seems to me to go far to show the certainty with which this essential object can be attained. It is, within my knowledge of the cases on record, second to only one (the successful one of Dr. J. B. Hamilton), in the number of lesions of the bowel. Dr. Randolph Winslow has published[3] an instance in which there were twenty-eight wounds of the intestines and bladder; but these were only discovered at the autopsy, no operation having been performed during life. As to the far

[1] Commentaries on the Surgery of the War in Portugal, etc., p. 515, Am. ed., 1862.

[1] Page 206.

[2] Traité de Chirurgie d'Armée, 1863, p. 545.

[3] Trans. of the Med. and Surg. Faculty of Maryland, 1885.

greater advantage in this respect of the modern practice over that recommended by Legouest and Guthrie, there can be no question.

Another and most important point gained by the later plan is in the cleansing of the peritoneum. When the surgeon, following the advice of Legouest, felt with his finger for a wounded bowel, drew it out, and sought for other wounds even "to the utmost possible limit," what security had he that there had not been, from some of the openings, an escape of fecal matters into the peritoneal cavity? How could he be sure that when he returned the carefully sutured bowel to its place, and closed the enlarged wound, he was not shutting up within the abdomen substances, which would inevitably provoke fatal peritonitis? It is surely in this respect, as well as in dealing with the mere injury to the bowel, that the extreme boldness of the modern practice is in the highest degree conservative.

I cannot but note with dissent one idea advanced, with some reserve indeed, by Dr. McGuire. He suggests that if his experience is confirmed by that of other observers, "the presence or absence of prolonged shock will help us to determine the presence or absence of visceral lesion." Several cases which have come under my own observation incline me to doubt the reliability of this test. Thus in one instance reported by me last year,[1] a wound of the stomach, liver, and internal mammary artery gave rise to so little shock that the patient, a woman, was able after her admission to the hospital to sit up in bed and undergo a careful physical examination. In another, the previous year, a man who had four wounds of the intestine, scarcely presented any symptoms of collapse until the approach of death from peritonitis several days later.

In the case now reported, the degree of shock manifested was certainly not such as to lead us to suspect not only such extensive damage to the bowel, but copious internal hemorrhage as well.

An important factor in producing death in my case seems to me to have been the great loss of blood from the wound of the iliac vein. And the question may perhaps be raised whether, in any case where upon opening the abdominal cavity a considerable quantity of blood is found to have been effused, it would not be better first to make search for the source of hemorrhage, to secure the vessel or vessels, and then to attend to the lesions of the bowel. There was here, however, a sufficient amount of oozing from different points to account apparently for the formation of the clots first noticed, in the time that had elapsed since the shooting. It would, of course, be the plainest dictate of common sense, if blood were seen pouring out, to stop it. But at the present stage of experience with these procedures, it may not be amiss to suggest that outside sources of hemorrhage,—outside, I mean, of the bowel itself,—should be first of all sought for, as a regular practice; and thus one cause of possible embarrassment, and even of grave risk, be set aside.

As to the actual process of suturing the wounds of the bowel, a few words may be said. None of the wounds were pared of their ragged edges, as generally advised. I omitted doing so on account of the delay that would have been occasioned; on account of the possible loss of substance in some places; and because it seemed to me that whatever was useless would, had the patient recovered, have been simply cast off into the lumen of the bowel, and carried away along with the fecal mass.

The Lembert suture was, as stated, used throughout both in closing the wounds and in uniting the cut ends of the gut where the resection had been done. I employed it because my colleagues favored it, and there was no time for discussion on minor matters. Yet the Gély suture seems to me to be, in some respects, preferable. Let me say, however, that I should not use it as generally described, and as I presume its inventor intended (for I have never seen his original account) that it should be executed. I should merely bring the ends together and tie them, instead of crossing them and reinserting them; thus making, not a continuous suture, but a succession of double interrupted sutures.

Less tissue need be taken up by Gély's suture, so that in a successful case the bowel would be left afterward with its calibre less encroached upon than by Lembert's. The sutures extend along the side of the edge of the wound instead of directly across it; thus there is a sort of splinting of the tissues which would seem likely to give greater firmness to the closure. Moreover, as the thread is carried along the edge of the wound, some time must be saved, since two points of the suture are made with each insertion of the needle.

As to the relative efficiency of the two methods in preserving the apposition of the tissues, I am not aware of any observations warranting a statement; but hope to be able at an early day to make some experiments with a view to testing the question.

The needles used had three-sided spear points; and several times the punctures made by them bled so freely as to demand attention. In any future case I should employ round needles much like those in common use, but shorter.

It will perhaps be noted that in the foregoing account nothing has been said of any search for the bullet. But, in fact, the survey of the abdominal cavity was quite complete, and it seemed certain that the wound of the iliac vein indicated the point at which the missile had passed out of the pelvis into a region where it would be comparatively harmless. It would have been worse than absurd to dissect down along the thigh for an article of so little value or importance, and I do not think the idea crossed the mind of any person in the room.

I offer this clinical record, with the brief comments which the pressure of my other work has allowed me the leisure to make, as a contribution to the accumulating experience of the profession in a most important, but as yet little explored field of surgery.

[1] THE MEDICAL NEWS, July 3, 1886.

INTUBATION OF THE LARYNX.

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IN the early history of any new and important operation, it is desirable that there be recorded as many cases as possible, from which to make a just

estimate of the value of the operation. For this reason, and because of some personal observations and experiences not noted by other writers, I desire to report the following cases:

CASE I.—Dr. M. D. Hull, of Arrowsmith, Ill., attending physician. Eva C., æt. eight and a half years, well nourished and healthy appearing, had been attending school in a neighboring town, where diphtheria had been prevalent. She had been suffering from a "cold" for several days prior to December 10, 1886, when she was removed to her home. Dr. Hull was summoned December 12, and diagnosticated membranous croup, and gave an unfavorable prognosis. His treatment was energetic with chlorate of potash and tincture of iron, together with quinine and calomel, and steam inhalations.

13th. There was much dyspnœa.

14th. I first saw the patient with Dr. Hull at 10 P.M. She had a very labored respiration from laryngeal stenosis, and a "croupy" cough. She was endeavoring to obtain relief by inhaling steam. Her pulse was 144, and temperature elevated. Inspection showed some pharyngitis, but for the most part the fauces were pale and anæmic. On the anterior upper portion of the left anterior pillar of the pharynx there was a spot, the size of a pea, that appeared like the beginning of a diphtheritic patch. From her respiration it was supposed that the membrane had not yet extended below the glottis. A laryngoscopic examination was easily made, and revealed an acute general laryngitis, with no membrane above the vocal cords. A membrane was seen extending from the vocal cords downward, with a tongue-like projection upon the epiglottis.

Intubation was recommended, and promptly consented to by the friends. Assisted by Dr. Hull and the nurse, on the second attempt, I inserted the largest O'Dwyer tube. But, before the thread was removed, the nurse relaxed her hold on the child's arms, when she instantly snatched the thread, and so extracted the tube. After a few minutes rest, on a third attempt, I successfully introduced the tube, giving prompt and great relief to respiration.

Shortly afterward, with a severe cough, she ejected the tube, and immediately afterward, a perfect membranous cast of the trachea three and one-half inches long, including the tongue of membrane on the epiglottis before described. The upper portion was thick, the lower thin. Respiration was so much relieved that it was not necessary to reintroduce the tube. The previous treatment was continued with calomel gr. ss every hour.

15th. Patient doing well. Respiration good. A spray of solution of pepsin was recommended.

16th. 9 P.M. I was summoned to introduce the tube again, but found no laryngeal dyspnœa to require interference. Pulse 130. Temperature 102.2°. Respiration fairly good. Tongue furred. Pillars of the fauces red. A diphtheritic membrane three-fourths by one and one-half inches was seen on the posterior wall of the pharynx, where I had caused a slight abrasion of the mucous membrane with my finger-nail as I made my first attempt to raise the epiglottis when inserting the tube. The capacious pharynx gave another good opportunity to use the laryngoscope. There was general laryngitis, the membrane being intensely red. New membrane could be seen forming below the vocal cords, but not upon them. Whistling, sibilant, and subcrepitant râles were heard over the upper lobe of the left lung, and sibilant râles over the lower lobe of the right lung posteriorly. She complained of pain in her head and abdomen. The latter was ascribed to the calomel. Intubation was not indicated. Treatment was continued as before with local applications of a strong carbolic acid solution to the throat. Dr. Hull informs me that the patient died the next morning from congestion of the lungs.

CASE II.—Dr. H. C. Littlejohn, of Farmer City, Illinois, attending physician. Milton S., æt. eight years, living in the same town where the first patient contracted her disease, was a slender boy, healthy, but not robust. Two weeks previous to this sickness he had had a mild "diphtheritic sore throat," from which he apparently recovered. He was taken ill on December 20, 1886, from exposure near an open window while at school, and was treated with domestic remedies. The next day difficult respiration developed, and Dr. Littlejohn was called. He gave a diagnosis of membranous croup, and an unfavorable prognosis. This opinion was subsequently concurred in by Drs. Gardner and Norris.

23d By noon the symptoms became so urgent that the only relief to be offered was by a surgical operation. I was summoned by telephone to perform either intubation or tracheotomy. About 4 P.M., when I reached the patient, respiration was so difficult that the child could not have lived till midnight unless relieved. Pulse 150; temperature not high. Membrane thought not to be below the glottis. Laryngoscopic examination was readily made, and revealed general congestion and inflammation of the pharynx and larynx. There was no membrane above the glottis, but one extended from that point downward. The chink of the glottis was very much narrowed.

The operation was explained and readily consented to by the patient and his parents. With the assistance of Dr. Littlejohn and a friend, I at once operated, and in a few seconds had the largest O'Dwyer tube successfully in the larynx. The results were immediate. After a very few minutes of coughing, the respiration became as quiet as in health; the countenance became bright, and general relief was experienced. In ten minutes he had fallen into a quiet sleep. Half an hour later he had taken some water and a little nourishment. The irritation from the presence of the tube had entirely subsided within an hour. At 5 P.M. pulse 144; temperature 101.5°; respiration 21. At 9.30 P.M., pulse 136; temperature 100.8°. Has been sleeping most of the time. Wants to know "if he can go down town to-morrow." He has taken a small cup of coffee, and a tumbler and a half of milk and cream, besides hourly doses of $\frac{1}{64}$ grain of bichloride of mercury. Has difficulty in swallowing, which is to some extent overcome by sipping from a saucer. The air in the room is kept charged with steam.

24th. Temperature at one time, 104°.

25th. Pulse 118; temperature 102°; respiration 26. Swallows fairly well; complains of the tube hurting him in swallowing; takes nourishment well; stomach was slightly irritable, but is better; no signs of lung trouble. Has been taking digitalis and quinine, and using a steam spray with carbolic acid, and also pepsin, with relief. The membrane or mucus seems loose in the throat.

26th. Pulse 104; temperature 100°; respiration 24. Appears bright; has vomited a little to-day; the right lung is slightly affected.

28th. At 3.45 P.M., just five days after its insertion, assisted by Dr. Littlejohn, I removed the tube. There was very little coughing. Some rusty mucopurulent matter, as of broken-down membrane, was expectorated. The patient took nourishment better, having refused it for the last day or two. Laryngoscopic examination showed inflammation, but no membrane. There was some evidence of systemic infection, and a feeble respiratory murmur over the base of the right lung behind. The treatment, according to indications, had been digitalis, quinine, carbonate of ammonia, and whiskey. The bichloride of mercury, which had been increased to $\frac{1}{32}$ grain, was now discontinued. At 9.30 P.M. Pulse 114: temperature 101.3°; respiration 30.

30th. Dr. Littlejohn reports the patient doing very well. Pulse 104; temperature 99°. Lung clearing nicely; tongue has begun to clean; expression good; takes more food; breathing very natural. His convalescence was uneventful and his recovery complete.

CASE III.—Dr. J. L. White, of Bloomington, Illinois, attending physician. Ida L., æt. about four years, was an inmate of the Illinois Soldiers' Orphans' Home, at Normal, Illinois, having been recently admitted. She had been suffering from whooping-cough, and recently developed symptoms of croupous pneumonia, or, considering the subsequent history, membranous bronchitis. Still later, membranous croup supervened, about five days from the beginning of the lung trouble.

By the use of calomel and jaborandi, combined with steam inhalations from lime water, and supporting treatment, there appeared to be a beginning of resolution in the lungs. Laryngeal dyspnœa had existed about three days before the operation. A portion of membrane about as long as one's little finger had been expectorated with some relief.

January 15, 1887. 10 A.M. I first saw the patient. She was apparently moribund; face pallid; aëration of blood bad; respiration feeble and croupy; pulse rapid and feeble. Without delay I performed intubation with the assistance of Dr. White and the nurse. The patient rallied very soon. The eyes, which had been dull, half closed, and dry with inspissated secretions, became bright and clear at once; respiration and aëration improved immediately. There was but little cough from the presence of the tube. In ten minutes the patient was in a quiet, natural sleep, with good respiration and an improved pulse. It looked as though she might recover. At 8.45 P.M., Dr. White reported the patient as doing very well, having strength, and retaining rectal alimentation, and thought she would recover. She died about 10 P.M., with no sign of dyspnœa, but quietly—probably from asthenia. When the tube was removed next day it was found clear.

REMARKS.—Out of these three cases, one, the second, was saved—not an unfavorabe showing when the character of the cases is considered. The first died probably from extension of the membrane to the lungs. The third case was as unfavorable as it is possible to imagine, and the final result was to be anticipated. Yet even in this case intubation did all that was possible, in that it prevented death from laryngeal stenosis.

It is interesting to note that satisfactory laryngoscopic examination was had in two of the cases:

CASE I., by the subsequent appearance of diphtheritic membrane in the fauces, has a bearing upon the identity of membranous croup and diphtheria. In each case the nature of the operation was carefully explained to the patient, and thus his willing coöperation was secured.

CASE III., from a retrospective view, appears to have been one in which the membrane first formed in the bronchial tubes, and afterward extended upward to the larynx—just the reverse of what usually takes place.

A little point, but none the less valuable, is that the nail on the index finger of the left hand should be trimmed as short as possible, that no injury may be possible from its introduction into the throat.

From my previous unfavorable results with tracheotomy, and from my experience so far with intubation of the larynx, I can mention the following points in favor of the latter operation:

1. It involves no cutting and is bloodless, hence,
2. Parents and friends readily consent to it when they would not to tracheotomy.
3. It gives a larger percentage of recoveries.
4. There is no perceptible shock after the operation.
5. There is no risk of systemic infection because of an open wound.
6. It does not expose the lungs to inflammation by the air not being prepared for inhalation by passing through the upper air passages.
7. It does not preclude a subsequent tracheotomy.

TOXIC EFFECTS OF SMALL DOSES OF DUBOISINE.

BY CHARLES W. KOLLOCK, M.D.,
OF CHARLESTON, SOUTH CAROLINA.

Two instances of poisoning by small doses of duboisine have lately come to my notice; one reported by Dr. Chadwick at a meeting of the Leeds and West Riding Medico-Chirurgical Society, recorded in the *Lancet* of January 8, 1887, and the second occurring in my own practice.

In the former, $\frac{1}{100}$ gr. of the drug "instilled for examination of a senile cataract, produced a state of delirium lasting many hours, leaving the patient totally unconscious of what had occurred. There was great muscular weakness, and strange actions were performed."

In the latter case a solution of duboisia sulph. (gr. j to aq. dest. fʒ ij) was prescribed for the purpose of examining the refraction of the eyes. One drop was instilled in each eye at 2 P.M., after which the patient took a nap. He awoke feeling somewhat dizzy, but had another drop put in each eye at 4 P.M. Upon going to dinner soon after he became so dizzy and blind (as he expressed it) that he was obliged to leave the table and lie down. I saw him about an hour later—three hours after first instillation. He was in bed, face flushed, pupils widely dilated, and body moving uneasily from side to side. Although apparently rational, his speech was thick, and remarks frequently without meaning or irrelevant. There was no headache, but mouth and throat were very dry, and he drank copiously of water. I directed that he be kept quiet, and that no more of the drug be used.

The next morning he came with his sister for examination, having fully recovered from the toxic effects of the drug. His sister, a bright and intelligent young lady, told me that although he seemed at times sensible, still he did not get quietly to sleep until 5 A.M., and that he continually talked to her as if she was some one else, but when asked who she was, invariably said "sister." The patient had no recollection whatever after leaving the dinner-table about 4 P.M., until late in the night, and did not remember my call, though he answered questions rationally. He said that he frequently wished to address some particular remark, but almost invariably said something else, and, though aware of his mistake, could not correct it.

The druggist, a very reliable man, was sure the prescription was properly compounded, and the prescription was correctly written, as examination afterward proved. The patient is strong and healthy, twenty years of age, but his sister says he becomes very delirious with the slightest attack of fever.

Dr. Chadwick "suggested that the susceptibility to this drug reached its maximum in *old age* [italics mine], and that similarity between the symptoms and those of senile atrophy, popularly known as 'softening of the brain,' might suggest that its action was by causing spasm of the arterioles, and might indicate a possible liability to that form of pathological change." The similarity between the toxic effects of the drug upon the two cases is marked; but while one was old and probably not strong, the other was a young man, stout and strong, of twenty years of age. Whether the symptoms were due to spasm of the arterioles, or not, I do not pretend to say, but we can scarcely draw conclusions from the age, as the effects were the same and ages widely different. $\frac{1}{100}$ gr. was used in Dr. Chadwick's case, and in mine $\frac{1}{240}$ gr. was instilled in each eye, which equals $\frac{1}{120}$ gr. in all, and this amount was twice instilled, with an interval of two hours. An accurate test of the pipette used for dropping the solution into the conjunctival cul-de-sac showed two drops to the minim. The medicine was administered by the sister, with most careful instructions to instil one drop in each eye at a time.

I may add that the errors of refraction were as follows: R., +1.25 D.; L., +1.75 D.

THE FIRST FIFTY CÆSAREAN OPERATIONS UNDER THE SÄNGER METHOD.

BY ROBERT P. HARRIS, M.D.,
OF PHILADELPHIA.

IN this journal on July 17, 1886, I presented a full tabular record of 28 Sänger operations, and propose at a future day, when all the particulars can be obtained, to extend the same to fifty. Since this method has been so much modified and simplified, as compared with the original device of Sänger; leaving out both his muscular resection, and separation of the peritoneal coat, it has been contended by some writers that there is no propriety in any longer coupling his name with it. This I for one cannot advocate, for there are other important features still left, in the seroso-serous multiple suturing of the uterine wound, as originally advocated by Dr. Sänger, which constitute the chief value in the method, over the old Cæsarean section. It is true that the seroso-serous welting of the peritoneum originated with Jobert (de Lamballe), who applied it to intestinal wounds. It is also true that the interrupted superficial suture of the peritoneum, by which its serous surfaces are kept in apposition, was devised by Lembert, for intestinal closing. It is also to be admitted that Dr. Sänger did not test his method for four and a half years after its first trial by Leopold, of Dresden, and stands eleventh in chronological order in my table, and twelfth in fact, as shown by a recently communicated record; and that he was the tenth man to operate. But who was it who advocated first, in writing, the application of the Jobert-Lembert system of suturing to the uterine wound in the Cæsarean section: and who also advocated the importance of employing many deep and superficial stitches in this wound? The uterine wound was sutured in the United States more than twenty times before Dr. Sänger wrote his paper, but no one ever turned in the peritoneum, and few used more than six deep sutures, the maximum being ten, and that number in only two instances; in 1870, and in 1874. The case of 1874 recovered, but was not reported until 1885, after the operator had done a second operation. In his report, Dr. Ingram, of Montezuma, Georgia, says that he sutured the uterus with carbolized silk, inserting 3 deep stitches, 3 more superficial, and 4 into the peritoneum only. In the records of 151 American Cæsarean cases, this is the only mention made of using peritoneal sutures prior to 1882. The value of the multiple system of suturing lies in the fact that the gaping *force* is so divided, as to reduce very materially the individual tension upon each stitch, and thus is prevented what had been so often found on autopsy, a gaping wound, with escaped uterine discharge in the peritoneal cavity. To Dr. Sänger's writing is certainly due the improved results in the Cæsarean operation in Germany. He was the means of starting a series of improvements which have culminated in the present system of operation, to which, by an almost universal assent, the name of "Sänger" has been given.

At the time of Leopold's first trial of the Sänger method, on May 25, 1880, there had been seven trials of the Porro operation in Germany, all fatal

to the women, but saving four children. A subsequent experience diminished the percentage of mortality, but still 16 women were lost out of 27, and 8 of their children.

Out of the discouragement produced by the Porro mortality in Germany grew several modifications of the Cæsarean operation, only one of which has stood the test of experience and become popular by success. The Sänger method has certainly worked a Cæsarean revolution in Germany, and to-day the Porro operation, even when as successful as in Milan, has an unapproachable competitor; for the success in her Maternity is far exceeded by that of Dresden.

The early record of the Porro operation shows that 20 women and 41 children were saved under the first 50, and 20 women and 36 children under the second 50.

Under the first 50 Sänger operations 35 women have been saved, or 70 per cent. against 40 by the Porro; 43 children have been saved, and probably 46—3 are yet to hear from. These cases are distributed as follows:

Countries.	Cases.	Women saved.	Women lost.	Children saved.	Children lost.	Number of operations.	Per cent. of women saved.
Germany,	33	29	4	30[1]	1	16	87 29/33
Austria,	5	2	3	5	0	3	40
United States	5	0	5	2	3	5	0
Italy,	3	2	1	3	0	2	66⅔
Russia,	2	0	2	2	0	2	0
France,	1	1	0	1	0	1	
Switzerland,	1	1	0	?[2]	...	1	
Total	50	35	15	43[1 2]	4	30	

Leipzig Maternity, operations 7, women saved 7, children saved 7
Dresden " " 15, " " 14, " " 15
Innspruck " " 2, " " 2, " " 2
24 23 24

Mr. Lawson Tait will be obliged to modify somewhat his opinion as to the mortality of the Cæsarean operation, which, when properly performed and promptly resorted to, is capable of securing such marvellous results to mothers and children. He will also have to reduce his comparative estimate of the Porro operation, which has taken a second place in its results. He, however, is inclined to favor the latter, because after the former the woman may again become pregnant, and require a repetition of the operation, which has eight times happened in the United States, and once again for a third time.

I return thanks to Dr. Sänger for repeated acts of kindness in furnishing me with the records of Cæsarean operations, some of which were communicated by their operators to him, and have not yet been published.

[1] Two to hear from; children probably living.
[2] One to hear from; child probably saved.

HOSPITAL NOTES.

GERMAN HOSPITAL.

Service of JOHN B. DEAVER, M.D.

TREPHINING FOR HEMORRHAGE FROM MIDDLE MENINGEAL ARTERY.

Reported by DR. GEORGE A. BODAMER, Resident Physician in Chief.

A. R., aged eighteen, was admitted to the German Hospital, December 17, 1886, with pistolshot wound over the left temporal region; the history of the case is as follows: While A. R. was playing with several companions, one of them, with a single-barreled 22 calibre pistol, attempted to shoot over his head, when the hand in which the pistol was held, being but about twelve inches away from the side of the head, was drawn down by another companion, and the pistol accidentally discharged.

Upon probing for the bullet the external table of the skull at the point corresponding to the wound in the scalp was found denuded of its periosteal covering and slightly roughened. The patient at the time of admission presented no head symptoms, was perfectly conscious, and suffered no more pain than usually accompanies such wounds. The wound was dressed antiseptically, and the patient was placed in bed. Upon making his visit through the wards the next morning Dr. Bodamer noticed that symptoms of aphasia had developed, and he notified Dr. Deaver, the attending surgeon on duty, of the nature of the case.

Upon the arrival of Dr. Deaver, the patient was taken into the clinic, and in the presence of the class was etherized and trephined. The outer wall of the cranium, at a point measuring two inches posterior to the external angular process of the frontal bone and two inches above the zygomatic arch, was exposed by dissecting up a horseshoe-shaped flap from the scalp. This was the point of the skull with which the ball came in contact, and being immediately over the base of the second and third frontal convolutions and the commencement of the ascending frontal convolution, the portion of the hemisphere in relation to the ascending limb of the fissure of Sylvius and the lower extremity of the fissure of Rolando, which region is known as Broca's convolution, or the region of speech.

The roughening which was detected at this point was caused by a small portion of the bullet imbedded in the outer table of the skull. The remaining part of the bullet was found one inch behind and below this point. It lay beneath the temporal muscle, and had assumed a rounded and flattened form. The trephine included the roughened portion of the skull. Upon removal of the section of bone, the internal table was found to be fractured with no depression of the fragments.

Upon the dura mater at this point was seen a clot of blood caused by hemorrhage from the middle meningeal artery. This was removed, catgut drainage was placed under the flap, the flap adjusted but not stitched, and the part dressed antiseptically.

As soon as the patient recovered from the effects of ether, no symptoms of asphasia remained, and he was again able to converse.

On the morning of the day of operation the tempera-

ture was 100° F., the following morning was 98.3° F., and remained from this time normal. He was discharged cured, January 22, 1887.

Treatment.—Ordinary treatment was pursued, viz., absolute rest; cold to the head; calomel, bromides, and a restricted diet. Patient was not permitted to get out of bed for four weeks.

Dr. Bodamer saw the patient on March 3d, when he stated that he was feeling as well as ever.

MEDICAL PROGRESS.

NEW TREATMENT OF PHTHISIS.—A new method of treating phthisis has been proposed, but apparently as yet but slightly tried, by PROFESSOR KREMIANSKI, who read a paper on that subject at the recent Moscow Medical Congress, which provoked a good deal of discussion. The idea is based, first, on the fatal effect of the most dilute solution of aniline on Koch's bacillus; and, secondly, on the fact that aniline seems to be but slightly, if at all, poisonous to the human body. Professor Kremianski proposes to introduce aniline into the lungs, and, indeed, the circulation generally, by inhalation, so that the phthisis bacilli should be bathed in a very weak solution of aniline, wherever they may be. This, he thinks, would kill them, and render even pulmonary cavities free from bacilli, so bringing them into the condition of healthy granulating ulcers, which may be expected to cicatrize. A committee has been appointed, including Professors Subbotin and Ostroumoff, who expressed themselves at the meeting as strongly opposed to the plan, for the purpose of observing Professor Kremianski's proposed experiments in one of the Moscow hospitals. Two cases in which the aniline treatment had been successfully tried were detailed. A lad of eighteen, who had undoubted phthisis, was ordered a four drop dose of aniline (but took by mistake three times the proper quantity) combined with nux vomica, mint water, and antifebrin, his diet being good, including dried meat, kvas and oranges. He was also given inhalations of atomized aniline. A remarkable change took place almost immediately, all the râles disappearing; his temperature, respiration, and pulse becoming normal. His skin, however, assumed a slightly blue tinge, but whether this was as permanent as the cure is represented to have been is not stated. The second case was a complicated one, there being tubercular peritonitis and meningitis, together with typhoid fever, present at the same time as pulmonary phthisis. Aniline inhalations, washing out the pulmonary cavities with corrosive sublimate and antifebrin, were employed, together with a special acid diet, as in the other case. Here, too, the results are said to have been remarkably good, the bacilli disappearing from the sputum, and the patient regaining his health entirely. No mention is made in the abstract published by the *Vrach* of any change of color in this patient's skin. Amongst the various replies that were made to Professor Kremianski, DR. ZAKRZHEVSKI, of Helsingfors, remarked that, admitting the facts as stated, still there was nothing to show that the aniline had been the cause of the cures. He himself had had surprisingly good results in phthisical cases, the disease becoming completely arrested by simply giving increased nourishment and prescribing antipyrin.—*Lancet*, March 5, 1887.

TREATMENT OF DIPHTHERIA.—The following is the treatment recommended by Dr. John Irving as quoted in the *Journal of Laryngology* for March, 1887. In cases uncomplicated by laryngeal symptoms the writer regards this as specific:

℞.—Liq. ferri dialysati . . . . ℥ss.
Glycerini acid. carbol. pur. (B.P.) . ℥ss.
Glycerini pur. . . . . ℥iss.
Syrupi simplicis . . . . ℥iss.
Misce bene, et adde aquam ad ℥ij.

One teaspoonful every two hours, and continue for eight days.

In a case of laryngeal diphtheria, the author uses

℞.—Pot. iod. . . . . gr. v.
Sol. nitro-glycer. (1 per cent.) . ♏iv.
Vin. antimonialis . . . ♏xlvis.
Glycerini pur. . . . . ℥ij.
Aq. ad . . . . . ℥ij.
Misce. One teaspoonful every two hours.

INTRAOCULAR CYSTICERCUS.—DR. VAN DER LAAN, writing in a Lisbon journal, gives an account of an ophthalmic case which puzzled him for some time. A man had been suffering from inflammation in the left eye for about a year. On examination there were found serious irido-choroiditis, almost entire loss of vision, opacity of cornea, and increased intraocular tension. Several times paracentesis was performed with some benefit. Iridectomy being refused, mercurials and purgatives were given for twelve months, during which time considerable improvement had taken place, ultimately permitting an ophthalmoscopical examination to be made. The retina was seen to bulge forward in one spot, where it was of a yellowish-white, the prominence increasing as time went on. It was observed that its form varied, being oblong and round by turns; the patient also said that he sometimes felt something moving in his eye. He then remembered that, when two years previously he had consulted a country practitioner, he had stated that he could "detect an organism, possibly the ovum of a tænia," a diagnosis which now proved to be correct. Dr. Van der Lann has published descriptions of the only two other cases of intraocular cysticerci he has seen in Portugal, which in many points differed from this case. He does not propose to operate until the cysticercus has succeeded in perforating the retina and thrusting its head and neck into the vitreous, when he hopes by means of a sclero-choroidal incision to free the patient from his parasite and to preserve the sight of the eye.—*Lancet*, March 5, 1887.

DIPHTHERITIC PARALYSIS OF THE OCULAR MUSCLES.—REMAK found this phenomenon present in 100 cases of diphtheria; it manifested itself from two to six weeks after the first symptoms of the malady and most often was accompanied by paralysis of accommodation.

Only one of those afflicted presented the association of mydriasis with paralysis of the ciliary muscles; twenty-eight were simultaneously attacked by paralysis of the soft palate with the ocular symptoms;

one patient had paralysis of the third and sixth nerves. The last mentioned patient presented in addition tabetic symptoms; at the autopsy hyperæmia and minute hemorrhages were found in the nervous centres.

Diplopia was present in most of the cases. The knee reflexes were lacking in four cases, and visual acuteness was diminished in the greater number. Remak does not share the opinion of Nagel, who attributes visual troubles after diphtheria to a neuritis caused by the diphtheritic virus.—*L'Union Médicale*, February 17, 1887.

VON FRISCH'S CONCLUSIONS UPON PASTEUR'S METHOD.—At a recent meeting of the Vienna Academy of Sciences VON FRISCH reported his conclusions, after reviewing the work of Pasteur.

1. Hydrophobic poison exists in its most concentrated form in the central nervous system of the infected animal.

2. Small amounts of the cerebro-spinal substance of an animal which died from rabies, when injected subdurally into another animal, produce, after incubation periods of varying length, the same disease without fail; and this process may be repeated.

3. After subdural injection with portions of the spinal cord of men who have perished from hydrophobia, animals become ill with a disease which manifests identical symptoms, and has the same period of incubation; the identity of the process in men and animals seems established.

4. Hypodermatic injection of cerebro-spinal substance results in a less reliable infection and a longer incubation period than when the injection is subdural.

5. The quantity of the virus injected hypodermatically seems to be in inverse ratio to the length of the period of incubation; the less the quantity the longer the time.

6. By the progressive transmission by subdural injection of cerebro-spinal virus, there results, after a series of cultures, a shortening of the time of incubation, which is at first irregular, then regular, and finally cumulative.

7. The virus obtained from Pasteur, obtained by forty or fifty generations in rabbits, whose period of incubation is fixed for seven days, exceeds in strength the virus of "street rabies," not only in that its resulting disease appears earlier, but also in that animals inoculated with it by both subdural and hypodermatic injection invariably acquire the disease.

8. Pasteur's "seven days' incubation virus" varies in its period from six to twelve days; a virus of equal intensity results from the second and third generation of "street rabies."

9. The obtaining of a virus of seven days' incubation period can be accomplished by other methods than those followed by Pasteur, and a result obtained more quickly.

10. Drying the cerebro-spinal virus over potassium hydrate, at a temperature of 20° C., continuously diminished its power until, in from fourteen to sixteen days, it became inert.

11. Animals, the subjects of experiments, which had been inoculated with virus weakened by successive dryings, were protected by this weaker virus against the action of the stronger, provided inoculations with the stronger did not follow each other in too rapid succession.

12. Animals which had been inoculated by hypodermatic injection with virus increasing in intensity during ten days, were found not to be protected against infection with "street rabies," as Pasteur states, and must be treated by subdural injection to be positively safe.

13. Rabbits and dogs which had been inoculated by trephining in the subdural space with the virus of "street rabies," and then received preventive inoculation with a virus of sixteen days' time of incubation—Pasteur's method—became ill with rabies; a dog which escaped the disease from the first inoculation was reinoculated fourteen weeks later by trephining, and developed rabies eight days after infection.

14. In criticism of the above results Pasteur claims that the preventive inoculations were made too tardily. He recommends inoculation within twenty-four hours after the infection, inoculations every two hours, and repetition of the whole series of inoculations; experiments made by the writer gave not a single good result from this method; animals so treated acquired rabies.

15. These experiments, however, showed the following important results: That by the rapid repetition of inoculations with virus of increasing virulence, protection on the part of animals inoculated with weaker virus against subsequent inoculations with stronger virus is not to be expected. A number of rabbits and dogs which served in control experiments, and on which was performed intensive inoculation without previous infection, were, in the greater number of cases, attacked by rabies.

16. Animals which received the preventive inoculation after subcutaneous infection with "street rabies," were less liable to death from rabies, especially when the time extended to thirty-four days.

Von Frisch concludes that much more work must be done before it is demonstrated that animals can be protected from rabies by inoculation; that no real ground exists for the belief in the efficacy of preventive inoculation in the human subject, while there is a strong probability that through inoculation of virus disease itself may be transmitted.—*Berliner klinische Wochenschrift*, February 7, 1887.

ANTIPYRINE AS A STYPTIC.—Henocque and Huchard have used antipyrine for bleeding from the nose and on wounds on the hand and fingers. They applied eight grains by dusting on the wounds.—*American Journal of Pharmacy*, March, 1887.

PREGNANCY IN AN IMPERFECTLY CANALIZED UTERINE CORNU.—DR. NETZEL mentions, in a Scandinavian journal, a rare case of pregnancy occurring in the imperfectly canalized half of a bicornate uterus. The movements of the child had ceased in the thirty-third week of conception, and from that time the woman became thin and felt ill. Five months later Dr. Netzel was called in; the diagnosis was uncertain. He could not find anything corresponding to an extrauterine pregancy, and it was clearly not a normal intrauterine one. He performed laparotomy, and thus discovered that conception had taken place in the right half of a bicornate uterus. An elastic ligature was applied round the base of the tumor. The uterus was opened and a macerated fœtus extracted. The half of the uterus was amputated with the tube and the ovary. All went well until a month after the operation, when an abscess

formed in the cicatrix of the abdominal wound, which was followed by a fistula. A quantity of silk and elastic ligatures came away a month later, and the woman ultimately recovered completely. Dr. Netzel thinks the rarity of such cases causes them to be confounded with extrauterine pregnancies, and with the "missed labors" of English obstetricians. He is of opinion that a more frequent resort to laparotomy would be of much service in throwing light on the subject. He mentions eight more or less doubtful cases as occurring in literature, including one reported by Dr. Keith, of Edinburgh. —*Lancet*, March 5, 1887.

IODOFORM AND SILVER.—A curious effect of iodoform upon silver is reported by Dr. Poncet, who had his attention directed to it by a patient, to whom he had been applying iodoform dressings, telling him that all soups and other diet for which she used a silver spoon had a very disagreeable taste, and the spoon itself had a garlicky odor. Upon investigating the subject Dr. Poncet found that silver that has been in contact with iodoform, or which is even touched by the fingers after they have been in contact with iodoform, acquires a nauseous odor, resembling that of garlic, which becomes more perceptible upon rubbing the silver. A drop of saliva from a patient fully under the influence of iodoform is said to be sufficient to impart this odor to silver, or the mere exposure of iodoform and silver in the neighborhood of one another. The odor is not that of iodoform, but is thought to be due to a decomposition product.—*Medical Press and Circular*, January 19, 1887.

CATALEPSY IN A MOTHER AND CHILD.—DR. VAN SCHOOT discusses in a Dutch medical journal a case of convulsive seizures of a peculiar kind in a woman in the seventh month of pregnancy. When he first saw her she was motionless, her face being cyanotic, but her temperature, respiration, and pulse normal. She was quite unconscious, and the slightly dilated pupils did not react to light. The arms were flexed at right angles, requiring some force to move the forearms. By means of chloroform all the contracted muscles relaxed, and some hours' sleep was obtained. Afterward she remembered nothing of the fit, but she stated that all movements of the fœtus seemed to have ceased, and no heart sounds could be detected. These attacks were repeated frequently for a fortnight, the urine being quite normal all the time. Large doses of bromide were given without effect, but some amelioration was produced by sulphate of atropine. Latterly the attacks were associated with considerable movements of the abdominal muscles. Some temporary benefit was obtained by subcutaneous injections of pilocarpine. At the conclusion of a fortnight from the first attack labor came on, a female child being born alive, which, however, died in a week's time, after repeated convulsions similar to those affecting the mother. The mother had no attack till the fifth day (the same day that the child's first attack occurred). After this there was only one more attack two days later, complete recovery ultimately taking place. The author, referring to the diagnosis, is disposed to exclude eclampsia, because, although there were clonic contractions of the abdominal muscles, the main spasm—indeed, at first the only kind of spasm—was tonic. The entire absence of albuminuria, too, tends to exclude eclampsia. Again, epilepsy may be excluded, as after the tonic no clonic spasms occurred, and as the limbs remained fixed in a certain position for one or two hours. He therefore considers that the attacks were of a cataleptic nature, both in the mother and child.—*Lancet*, March 5, 1887.

EXPERIMENTS UPON THE EFFECTS PRODUCED BY STEEL-COATED PROJECTILES OF SMALL CALIBRE.—At a recent meeting of the Surgical Society of Paris, M. CHAUVEL reported the following experiments with projectiles from ⅓ of an inch to 1¼ inches long and weighing from ½ to 1 ounce whose core was lead, but whose envelope was steel.

Ten experiments were made by firing with full charges at distances varying from 30 to 50 feet. The results were the same as those with other projectiles: the bones were split; the visceral wounds were considerable, and more cadavera, placed in succession, were perforated than with other missiles; the balls were not deformed.

In a second series of experiments but half a charge of explosive was used, and the velocity was lessened one-third. The wounds of the soft parts produced were not extensive, the apertures were not ragged, small, and the tracks of the wounds straight.

In bony tissues the cancellous extremities were pierced as by a trocar; the periosteal wound was small, but frequently of considerable length.

In the compact tissues the lesions were comminuted; there were numerous fragments and long fissures.

The conclusion was reached that these bullets were no more humane for use in warfare than those usually employed.—*Journal de Médecine*, February 20, 1887.

A NEW METHOD OF CULTIVATING TUBERCLE BACILLI. —In the *Annales de l'Institut Pasteur*, MM. NOCARD and ROUX describe some valuable experiments which they have been making on the tubercle bacillus. As is well known, Koch only succeeded in obtaining satisfactory cultivations in solidified blood-serum; and all who have attempted to cultivate these organisms have found it a matter of considerable difficulty. M. Nocard, in a previous paper, stated that he had obtained better cultivations when he added to the serum, before its solidification, 1 per cent. of peptone, 0.25 per cent. of chloride of sodium, 0.25 per cent. of cane-sugar. He noticed, however, that the surface of this material after a time became covered with a thin, dry, iridescent pellicle, due probably to desiccation and oxidation of the superficial layer; and that in this material the bacilli did not grow well. To obviate this, the authors added a small quantity of glycerine to the material, and found that they obtained better growth than previously. They then tried the effect of adding glycerine to nutritive material solidified by adding agar-agar, and found that, when 6 to 8 per cent. of glycerine was added, copious growth of the tubercle bacillus was obtained. This is a very important result, as the material is easily prepared, and as by its aid plate cultivations can be made. The authors have also found that, by the addition of 5 per cent. of glycerine to various cultivating fluids, excellent growth is obtained in the form of flocculi at the bottom of the flask, somewhat resembling cultivations of anthrax bacilli.—*British Medical Journal*, March 5, 1887.

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SATURDAY, MARCH 26, 1887.

EXCISION OF INTERNAL PILES.

THREE hundred consecutive cases of internal hemorrhoids cured by excision, without a death, a single instance of secondary bleeding and not followed by such complications as ulceration, abscess, stricture, or fecal incontinence, is the record of WALTER WHITEHEAD, of Manchester, which may be found in *The Brit. Med. Journ.* for Feb. 26, 1887.

The modified operation of excision, as performed by Whitehead, is based upon the frequency of relapse after the ordinary procedures resorted to on account of the dread of hemorrhage, the cause of which recurrence is that the vessels not only constitute individual tumors, but that the entire plexus of veins surrounding the gut is involved. The removal of the main protuberances has, therefore, no effect upon the minute venous radicles which exist between and behind them, since they soon enlarge, and, in their turn, give rise to new tumors. This disposition of the vessels has been revealed by the numerous operations practised by Whitehead, so that the truth of his assertions cannot be denied.

The operation is performed as follows: The anæsthetized patient having been placed in the lithotomy position, and the sphincters paralyzed by stretching with the fingers, the mucous membrane is divided, with scissors and forceps, at its junction with the skin around the entire circumference of the bowel, every irregularity of the skin being carefully followed. In this stage of the operation the incisions through the mucous membrane should commence posteriorly, and then be carried along the sides in succession, before completing the circle above, so that any oozing of blood may be below the work as it proceeds. The attachments of the mucous membrane and piles to the sphincters is then rapidly severed with the closed scissors or fingers, when the former, thus separated from the submucous bed on which they rested, are pulled down, and the hemorrhoids brought below the margin of the skin. Up to this point there is practically no bleeding; but in the next stage of the procedure, which consists in transverse division of the mucous membrane above the piles, the vessels are necessarily cut. To guard against hemorrhage, the mucous membrane should be divided by degrees, and each vessel twisted as it is cut. Before making any further incision in the bowel, the free edge of the piece of mucous membrane first divided is sutured with carbolized silk to the corresponding portion of the skin at the verge of the anus. This procedure is repeated until the entire circumference of the bowel is secured to the skin, the result being that a complete ring of pile-bearing mucous membrane is removed. Before closing the wound iodoform is insufflated between the raw surfaces.

While the patient is still on the table, a suppository of two grains of extract of belladonna is inserted into the rectum, the external parts are dusted with iodoform, and a strip of oiled lint is retained as an outer dressing with a bandage. The patient sits up on the fourth day, and is able to resume work in a fortnight. Pain after the operation is rarely complained of, but retention of urine occasionally follows.

The loss of blood at the time of the operation is so small as scarcely to merit notice, if care be taken to seize each vessel as it is cut with forcipressure forceps and twist it. Indeed, Whitehead states that he has frequently operated on severe cases, and not found it necessary to twist a single vessel, and very often only one or two. In addition to the freedom from primary bleeding, there was not a single instance of secondary hemorrhage, so that the dread of hemorrhage is a delusion in the improved method of operating.

From the foregoing account it appears that Whitehead's procedure is as safe as it is radical, and that the pain is less severe than after the other methods commonly practised. So large and successful an experience certainly entitles it to a full and fair trial, although we may expect some records of free bleeding when the operation is performed by inexpert surgeons. That the operation is an excellent one is evident from the praise given it, by Lange, in THE MEDICAL NEWS for February 12, 1887, who, however, erroneously claims it to be his own procedure.

MEDICAL INSTRUCTION IN ITALY.

PROFESSIONALLY considered, Italy is almost an unknown field to American physicians, who rarely visit the peninsula, except in search of health, or to ex-

amine its grand collections of paintings, antique works of art, and historic ruins. Few think it worth while to pay any attention to her hospitals, maternities, and surgical, obstetrical, or gynecological clinics, knowing little of the work done therein, and still less of the men engaged in it. Occasionally a surgeon will be heard to speak in complimentary terms of the progress made in his branch in Italy; but his language has only a general application. The late Prof. Francesco Rizzoli, of Bologna, who left a fortune of nearly $400,000, the bulk of which goes to found an orthopædic hospital, had a world-wide reputation. Prof. Edoardo Porro, of Milan, has achieved eminence by the introduction of a well-known operation that bears his name. Prof. Domenico Chiara is distinguished for his marvellous successes in obstetric surgery, first in Milan, and more recently in Florence. Prof. Pietro Loreta, of Bologna, earned reputation by his new operation, the digital divulsion of the pylorus, and the success which has attended it, in curing pyloric stenosis resulting from non-malignant ulcerative pyloritis. Prof. Ottavio Morisani has acquired distinction by reviving in Naples the much-condemned operation of symphysiotomy, and by the marked success attending its performance in saving mothers and children. Beyond these names, few are known on this side of the Atlantic, except to the small number who read Italian medical periodicals. The Italian professors feel that there has been a great revival in medicine in their country, and that they have been neglected too much by medical tourists in Europe, who have confined their visits to Great Britain, France, Germany, and Austria; going to Italy, if at all, simply as sight-seers.

There are more than twenty Royal Universities in Italy; the chief, in the order named, measured by their classes, are those of Naples, Turin, Rome, Bologna, Padua, Pavia, Palermo, and Genoa. There were in all the universities of the kingdom in 1885–1886, 14,633 students, of whom 5195 were engaged in medical studies. The professors who are best known for their obstetrical and gynecological work are: Prof. Domenico Tibone, of Turin; Prof. Domenico Chiara, of Florence; Prof. Ottavio Morisani, of Naples; Prof. Ercole Pasquali, of Rome; Prof. Fabbri, of Modena; Prof. Cuzzi, of Pavia; Prof. Calderini, of Parma; and Prof. Luigi Mangiagalli, of Catania. To whom may be added Prof. Edoardo Porro, Director of the Obstetrical School of Milan, and Prof. Paolo Negri, Director of the Obstetrical School of Venice. Of gynecologists not obstetricians, we specially mention Drs. Prelli and Berruti, of Turin; Dr. De Cristoforis, of Milan; Prof. Caselli, of Genoa; Dr. Ruggi, of Bologna; Prof. Bassini, of Padua; and Prof. D'Antona, of Naples. The most noted men of Italy engaged in general surgical work are Prof. Bottini, of Pavia; Prof. Bassini, of Padua; Prof. Corradi, of Florence; Prof. Durante, of Rome; Prof. Loreta, of Bologna; Prof. Novaro, of Siena; Prof. Caselli, of Genoa; Prof. D'Antona, of Naples; and Dr. Gerolamo Mo, of Turin. The chief ovariotomists of Italy, measured by the number of their cases and percentage of success, are Prof. Chiara, of Florence; Prof. D'Antona, of Naples; Prof. Negri, of Venice; Prof. Novaro, of Siena; and Prof. Porro, of Milan.

Obstetrical clinics are found in Palermo, Prof. Pantales; at Pisa, Prof. Minati; at Pavia, Prof. Cuzzi; at Padua, Prof. Frari; at Turin, Obstetrico-Gynecological Clinic, Prof. Tibone, and Chief Maternity, under direction of Dr. Michele Peyretti. Florence, Obstetrico-Gynecological Institute, Prof. Chiara; at Naples, Obstetrico-Gynecological Clinic, Prof. Morisani. The old Neapolitan Hospital for Incurables has an obstetrical department; Genoa, obstetrical clinic, Prof. Macari; School of Obstetrics in Milan, under Prof. Porro; Venice, "Maternity of the Civil Hospital and School of Obstetrics," Prof. Negri; Bologna, obstetric clinic, Prof Carlo Massarenti: Maternity, Dr. Cesare Belluzzi.

The larger cities of Italy are well supplied with hospitals. Bologna has: 1. The Clinical Hospital, about 250 beds; which has sections for medicine, surgery, obstetrics, diseases of the eye, of the skin, and for syphilis. 2. The Grand Hospital, with about 300 beds; two sections of medicine and two of surgery. 3. The Insane Hospital, with 700 beds. 4. The Maternity, 24 beds; attached to which is a Foundling Hospital, with 46 beds and 100 cradles. 5. The Military Hospital, 500 beds. In the Maternity, under Dr. Belluzzi, from 120 to 130 labors are conducted annually; and in the obstetric clinic, about 150 women are delivered; Prof. Carlo Massarenti is director, and attached to the service are Prof. Ercole Fabbri, Dr. Emanuele Bruer, Dr. Leopoldo Golineli, Dr. Ermanno Pinzarri, and Dr. Cesare Belluzzi. The University of Bologna celebrates next year her eight hundredth anniversary; her famous library occupies a hall 600 feet in length. The course of medical study in the Universities of Italy lasts six years. The lectures of each year are held from early in November to the middle or end of June, varying from seven and a half to eight months in the different schools.

In certain sections of Italy, rachitic deformity of the pelvis is frequently met with in obstetrical practice, and in other sections malacosteon is not rare. The treatment of such deformities has made her obstetricians skilful in pelvimetry; in the induction of premature labour with safety to mother and fœtus; and in the Porro-Cæsarean section. Prof. Chiara, of Florence, has had unparalleled success in this operation, and, more recently, saved two women with

their children, by the improved Cæsarean section, of Leipzig and Dresden, the last having been performed on February 9th. In Naples, rachitic deformity often presents itself, and delivery by the old Cæsarean method having been almost universally fatal, the operation of Sigault has been revived with a remarkable degree of success. But as this method cannot take the place of gastro-hysterotomy in extreme pelvic deformity, the improved Cæsarean section of Germany will be employed where symphysiotomy is inapplicable, as the mortality by it has been much below that of the Porro operation.

TUBAL DISEASES.

THERE is no subject in gynecology that has attracted so much attention of late years as the diseases of the Fallopian tubes and their operative treatment. The discussions on these topics have been voluminous, almost always partisan in character, and rather acrimonious, so that Martin's contribution to the *Zeitschr. f. Geburtsh. u. Gyn.*, B. xiii. H. 2, aside from the value attaching to a careful investigation of a larger number of cases, is the more acceptable from its judicial tone, from the absence of prejudice, on the one hand, in favor of indiscriminate operative interference; on the other, in favor of an exaggerated expectant treatment.

The views expressed by Martin are based upon the observation of 287 cases of tubal diseases and upon a microscopic study of the specimens of diseased tubes removed from 61 women, from the latter of which it appears that there are a catarrhal or endosalpingitis, an interstitial salpingitis, and a follicular salpingitis in which the mucous membrane dips down into the follicles of the walls of the tubes.

Regarding salpingitis from another point of view, one must take into account the changes in the walls of the tubes, their thickening from inflammatory products, alterations in their peritoneal covering, the sinuosities or the complete obstruction of the tubal canal, giving rise to isolated collections of fluid, and the entrance into the tubes of microorganisms, those so far observed being the microbes of puerperal septicæmia, gonococci, tubercle bacilli, and, in one instance, the microbe of actinomycosis. In these latter, the infectious diseases of the tubes, the puerperal form was, in the 287 cases observed, the most frequent, the gonorrhœal ranking next, while the tubercular form was the most disastrous in its results.

The course of tubal diseases ends, in the majority of cases, in recovery. In not one-fourth of all the cases observed was the operation for the removal of the uterine appendages considered justifiable. These statements are made by a man known everywhere as an unusually bold operator, and, coming from such a source, are of the greatest value, for the undoubted tendency of the discussions that have lately occupied medical societies and the medical press, has been to impress upon the minds, especially of younger men, the necessity for operative interference in tubal diseases, when, in point of fact, such operations, unless milder therapeutic measures have been first thoroughly employed, are often absolutely unjustifiable.

FIXATION OF A DISPLACED SEMILUNAR CARTILAGE.

IN displacement or luxation of one of the semilunar cartilages, an accident that occurs during a twist or wrench of the knee-joint when the leg is rotated outward or inward, the anterior attachments of the cartilage, and most frequently of the internal one, are separated. Patients who have once suffered from such a displacement are particularly prone to a recurrence of the trouble, and in many cases the ordinary plan of treatment by reduction and retention by an apparatus is a complete failure.

Under these circumstances, the comfort and usefulness of the subject being seriously interfered with, the method of fixing the cartilage, first practised, in 1883, by PROFESSOR ANNANDALE, and successfully resorted to by him in four cases, is worthy of adoption. The operation, described in the *British Medical Journal* for February 12, 1887, is performed in the following manner:

An incision is carried on the side corresponding to the detached cartilage, along the upper edge of the tibia from the ligament of the patella for a distance of three inches. Before opening the synovial membrane, bleeding points are secured, when the membrane is incised to the same extent as the superficial wound. The anterior margin of the cartilage having been brought into its proper position by a blunt hook, it is secured to the periosteum and fascia over the head of the tibia by several catgut sutures, when the external wound is closed by stitches, and the usual antiseptic dressings and a splint are applied. In the four cases recorded, the recovery was rapid, and good use of the joint was restored.

INTRAUTERINE INJECTIONS IN SEPTICÆMIA.

THE value of antiseptic intrauterine injections in the treatment of puerperal septicæmia has been so often proved that few physicians would dare to treat a case of the disease without resorting to them. Such injections constitute the causal treatment of the disease. Their employment, too, is indicated not only when the lochia become offensive, but also, independently of this, in cases of unequivocal septic infection; for such infection while usually associated with that condition, may occur without it, just as in rare instances a badly smelling discharge may be present and the infection absent.

The excellent paper, by DR. DAVIS, in the last

number of THE MEDICAL NEWS, shows some of the dangers which may result from the use of corrosive sublimate injections, and suggests means by which these may be prevented. It is probable, as Fritsch has pointed out, that the evil done by corrosive sublimate injections is caused, not by the portion of the solution brought in contact, temporarily, with the uterine mucous membrane, whether that membrane be wounded or entire, but by that which remains in the uterus or vagina, and from which the absorption is gradual and not immediate. To obviate this evil, after an injection is used, the operator ought to compress the uterus, so as to empty it completely, the free escape of the fluid through a patent cervical canal being secured. Further, he might wash out the vagina subsequently with water that has been well boiled, and thus prevent the retention of the corrosive solution. Were these precautions employed, we would more rarely hear of serious symptoms following such injections. The strength of the solution in most cases need not be greater than 1 to 2000.

It is only exceptionally that more than two injections in the twenty-four hours are required. Continuous irrigation has been tried in these cases, but, like drainage, has nothing to commend it, and therefore should not be employed.

UPON examining the list of officers of Sections of the American Medical Association for the next annual meeting, as published in the *Association Journal*, it will be observed that of sixteen positions Illinois has four, Missouri three, Maryland two, and New York, Pennsylvania, New Jersey, Ohio, Kentucky, Arkansas, and Minnesota, each one. As is seen, two States—Illinois and Missouri—furnish nearly one-half of the appointees, the former having one more than the latter; but as Missouri has the presidency of the Association, she will probably not complain of unjust treatment.

The American System of Gynecology, which is being edited by Dr. M. D. Mann, of Buffalo, we are informed, will be published shortly by Messrs. Lea Brothers & Co., of Philadelphia. Among its contributors are found such prominent authorities as Professors Barker, Battey, Engelmann, Garrigues, Goodell, S. W. Gross, Reeves Jackson, Lusk, Mundé, Reamy, Thomas, and Van de Warker. The work will doubtless present a complete and authoritative statement of the science in its most recent aspects, and will receive a deservedly warm welcome.

ACCORDING to a recent cablegram, a large canvas by Brouillet is expected to be the sensation at this year's Paris Salon. It represents Dr. Charcot giving a lesson at the "Salpêtrière" to his pupils and some invited guests. He stands at a table, one arm half extended toward the audience. His assistant, M. Babinski, stands near, holding a woman stricken with hysteria. The hospital nurse stands watching, ready to give any possible aid. Another realistic painting is by Gervex, representing Dr. Péan, in the hospital amphitheatre, giving a daily lesson in surgery. A female patient, under chloroform, lies on the table before him, an assistant surgeon kneeling beside her counting her pulse, while a Sister of Charity waits for the operation to begin.

REVIEWS.

PRINCIPLES OF HYGIENE FOR THE SCHOOL AND THE HOME, TOGETHER WITH SO MUCH OF ANATOMY AND PHYSIOLOGY AS IS NECESSARY TO THE CORRECT TEACHING OF THE SUBJECT. By EZRA M. HUNT, A.M., M.D., Sc.D. New York and Chicago: Ivison, Blakeman, Taylor & Co., 1886.

WHEN the new Drury Lane Theatre was erected upon the ashes of the old, an "Address without a Phœnix" was sufficiently rare,—as those of us who still read the writings of the brothers Smith can well testify. Nowadays, a school "Hygiene" without an intemperate discussion of the temperance problem is similarly rare. It is not impossible that the intemperate reformers do good. Fire must sometimes be fought with fire. But, as scientific men, we cannot give to their statements the welcome and endorsement which we gladly accord to a judicial exposition of the dangers attendant upon the use and abuse of stimulants and narcotics.

Dr. Hunt's book is of the latter class. The alcohol question receives the vigorous handling that it deserves, but the book is not subordinated to this theme.

The work throughout is abreast of the times; its statements are clear and terse. The discussion of the digestive process is, perhaps, rather too much condensed, but the chapters on Water in its relation to health, and on Heating and Ventilation are masterly.

SOCIETY PROCEEDINGS.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, March 9, 1887.

THE PRESIDENT, J. SOLIS-COHEN, M.D. IN THE CHAIR.

DR. J. SOLIS-COHEN read a paper on the

ADMINISTRATION OF GASEOUS ENEMATA IN PHTHISIS.

The object in view, he said, is to supply to the venous circulation an antiseptic, such as sulphuretted hydrogen, in sufficient doses to be effective; a result impossible when supplied directly to the arterial current, a plan which would poison the patient. Sulphuretted hydrogen inhaled in far less than sufficient doses would suffocate the patient; taken by the stomach, it would produce other serious results. Administered by the bowels, however, and entering the venous current already deteriorated by organic refuse, it is quickly eliminated by the respiratory tract, which thus becomes subjected to

its beneficial local antiseptic effects without subjecting the system at large to injury, as when thrown into the arterial current. In other words, the parasite is killed, without killing the individual.

Its beneficial effects in phthisis are explained by the action of the gas on the suppurative and septic surfaces, and not by any influence on the bacillus tuberculosis; the consumption proper, the exhaustion, being due to the suppuration and to the consequent septicæmia, and not immediately to the bacillus, which, while it produces the destruction of tissue, does not produce the morbid phenomena. The method of administration utilizes the discovery announced by Bernard in 1857, that toxic material introduced into the economy through an organ at a distance from the arterial system could not penetrate into the arterial system because it is eliminated before that system can be reached. Volatile substances are eliminated by the pulmonary alveoli.

The antiseptic substance employed is preferably sulphuretted hydrogen. This is propelled by means of a current of carbonic acid. It is important that the carbonic acid be freshly made, and that the injection be made without any admixture of atmospheric air, the presence of which will cause griping.

The carbonic acid gas as evolved from the action of the dilute sulphuric acid upon sodium carbonate is collected in a rubber bag previously emptied of air by rolling it. This bag is then connected with a hand-ball compressor, by means of which the gas is propelled through natural sulphurous water in a sort of Wolfe bottle, driving off the sulphurous gas with it through a tube, the terminal extremity of which has been passed into the rectum. Within less than a minute the escape of the gas by the lungs can be detected in the breath.

The beneficial results obtained in pulmonary phthisis by Dr. Bergeon, and reported last July to the Académie des Sciences, have been confirmed by Prof. Cornil, in a communication last October, to the Académie de Médecine, by numbers of French physicians, and by Dr. Hughes Bennett, of Mentone. Bergeon stated that the patients he considered practically cured, had no more expectoration and only dry auscultatory signs of cicatrizing cavities, or other cicatricial results of old lesions. Some of them had become able to resume tolerably laborious employment, with full maintenance of the amelioration they had acquired.

In most patients, it is said, there is marked diminution of cough, expectoration, and night sweats within two or three days. Nevertheless, the trifling expectorations of those apparently practically cured, continued to contain bacilli. This fact may be taken both for an indication that the immediate danger in phthisis is less from the bacilli than from the septicæmia which they set up, and as an indication that this protective treatment, when successful, should not be discontinued until the general healthiness of the tissues is sufficiently restored to resist the further development and sustenance of the bacillus tuberculosis.

DR. WILLIAM OSLER said that recently, at the University Hospital, a patient very nearly expired after an injection of a mixture of carbon dioxide and sulphuretted hydrogen. He was not aware at the time that sulphuretted hydrogen, if given in sufficient quantities, is capable of producing poisonous effects even when taken by the rectum. He mentioned this accident, lest similar mistakes may arise. Evidently the amount of sulphuretted hydrogen which is given must be small. At the Biological Society, at Paris, some experiments were related, which showed that even a few cubic centimetres are sufficient to poison a good-sized dog. In the experiences which are related in French journals, the odor of sulphuretted hydrogen is readily observed in the breath, but he had not noticed this in any of the Blockley patients. This is an exceedingly interesting, not to say comical, method of treating phthisis, but it is too early to say what the results are likely to be. Certainly, however, in Dr. Bruen's hands, at the Philadelphia Hospital, they have been extremely good.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting March 17, 1887.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

DR. T. MITCHELL PRUDDEN read a paper on

BACTERIA IN ICE AND THEIR RELATIONS TO DISEASE, WITH SPECIAL REFERENCE TO THE ICE SUPPLY OF NEW YORK—AN EXPERIMENTAL STUDY.

Our knowledge of the dangers of impure water, he said, had become much more precise since we had learned that many common and fatal diseases are caused by minute plants, called bacteria, which such water might contain, and as the questions relating to a pure ice and water supply are for the most part identical, he thought it well to call attention in the first place to the new methods of water analysis and the new facts which their use has elicited. Until recently, a considerable amount of organic matter, as determined by chemical examination, and particularly if this could be shown to be of animal origin, had usually been regarded as a sufficient evidence of its unfitness for drinking purposes, because it usually signified decay, putrefaction, or the presence of animal excretion. Organic water had been of late looked upon as indicative of the presence or action of bacteria; but chemical examination could determine only inferentially the presence of these organisms. In the new methods of research, however, it is no longer necessary to *infer* the presence of bacteria, but they can be actually seen, counted, and their species and action on the animal body definitely determined. The new method of water analysis, which has to do with its living contaminations, is called the biological analysis. This, and the older chemical method are in most cases supplementary; but, so far as a certain class of diseases, which may be transmitted by water, are concerned, such as typhoid fever and cholera, it is safe to say that the biological is by far the more important.

Having explained the technique of the biological analysis, he said that in the course of from two to four days the colonies of bacteria, each now containing thousands of the organisms, had become large enough to be readily visible to the naked eye or with the aid of a low magnifying power. It was only necessary now to count these colonies in order to know exactly how many living bacteria were present in the cubic centimetre of water used for analysis, because each visible colony was the result of the growth on the spot from a single in-

visible bacterium, which was caught here when the gelatine of the culture medium solidified. In order to identify the species of the bacteria and test their effects upon animals, a little bit was taken from one of the colonies with a sterilized wire, and put into a fresh tube of nutrient gelatine, where it would grow until enough could be obtained for further experiments. In this manner we could get, growing in separate tubes, pure cultures of all the different species which had been growing side by side on the gelatine plate on which the water was, so to speak, planted.

It was always a matter of surprise to one unaccustomed to such a delicate mode of water testing to find what large and varying numbers of these living organisms ordinary water may contain. We usually congratulate ourselves that in New York, said Dr. Prudden, we have an especially good water supply, and this is in a certain sense true. But a series of 32 analyses of the Croton water, as it was delivered through one of the faucets at the College of Physicians and Surgeons on different days during the past five months, shows the lowest number of living bacteria to one cubic centimetre to be 57, and the highest 1950, while the average of the 32 analyses is 243. When the first accurate biological analysis was made it was supposed that any water which contained a large number of bacteria was unfit for drinking purposes, but as our knowledge had increased it became necessary that this view should be very materially modified; since, so far as is yet known, a large proportion of the bacteria which are everywhere so common and abundant are perfectly harmless. Their *rôle* is to tear down organized bodies into their simpler constituents, a small part of them being used for their own nutrition and growth, while the larger part is given up to other organisms for their life purposes. The bacteria are thus indispensable and omnipresent factors in the working out of the organic processes of nature. It still remains true, however, that a certain number of species, which can live in water, as well as elsewhere, can and do produce deadly diseases and are responsible for some of the most frightful epidemics.

When, then, we know the bacterial contents of a given specimen of water, we have still other things to learn before we can pronounce upon its salubrity. It is necessary to ascertain whether it has been stagnant; whether part of the bacteria are those at least relatively harmless bacteria (which live and proliferate to an enormous degree in pure water); and, above all, whether there has been any chance of sewage contamination. A great variety in the species of bacteria present in a water is rather indicative of sewage contamination, and our lack of knowledge concerning the larger proportion of all bacteria compels us to be most cautious regarding them; erring, if we must, on the side of safety. In a general way, it may be stated that water containing more than from 50 to 100 living bacteria to the cubic centimetre should not be used for drinking purposes without filtration or other mode of purification; and it should always be remembered that absolutely pure water contains no bacteria at all. In any case in which sewage contamination can be positively excluded, judging from the source and surroundings of the water supply, the limit of safety mentioned might, perhaps, be placed considerably higher.

Having remarked that all of these data concerning bacterial water contaminations and water analyzed applied equally to the problems which ice impurities present, Dr, Prudden went on to say that the biological analysis of ice is conducted in precisely the same way as that of water, except that the ice must be thoroughly cleansed and then melted. While the popular belief, that water in freezing purifies itself, has some foundation in fact, it is to be remembered that the bacteria are so minute that they may exist in water in enormous numbers without in the slightest degree impairing its clearness and transparency. The consideration of bacteria in ice is, in the light of modern methods of research, an almost untrodden field, and he had thought it well, therefore, to get some positive data about the action of low temperatures under conditions which we could control in the laboratory, to guide us in our interpretation of nature's processes carried on in a large scale and under varied conditions. With this purpose in view he had conducted a series of experiments on the effects of cold on pure cultures of six different species of bacteria when these were suspended in water. These experiments he described and then summarized their results in six tables. One of the species experimented upon was the bacillus of typhoid fever, and the result showed that while many of the individuals were destroyed, many still remained alive, even after prolonged freezing.

ALTERNATE FREEZING AND THAWING OF BACTERIA SUSPENDED IN WATER.

The experiments in general showed that a large reduc tion in the number of viable individuals occurred at the first freezing, while more gradual destruction went on as the low temperature was maintained. Subsequent experiments were made with results which are embodied in three additional tables, and from these it was seen that the typhoid bacilli, as well as other microbes experimented on, were soon exterminated after alternate freezings and thawings.

FREEZING OF NATURAL WATERS.

The examination of the water from a given pond or river, and the ice formed from it in the natural way, did not, even if the water was taken in winter, when the ice was forming, give a very accurate distinctive percentage, because the water beneath was always more or less in motion, and in both water and ice there was a very unequal distribution of the bacteria. Approximate accuracy might, however, be obtained by collecting water from various sources in winter, and, after determining from each sample the average number of bacteria in one cubic centimetre, comparing the results. This was done with water taken from Van Cortland Pond and from the Hudson and Croton Rivers, and Dr. Prudden summarized the results in a general way by saying that natural waters containing bacteria on being frozen and remaining so for a few days, may purify themselves by the destruction of as much as ninety per cent. of the bacteria. Furthermore, the number of bacteria is gradually reduced in the ice as time passes; but this reduction does not go on to the complete extinction of all species. He then proceeded to a consideration of the problems which our ice supply presents.

SOURCES OF NEW YORK ICE.

The ice used in New York City, as well as to a certain extent in Brooklyn and Jersey City, is supplied almost entirely from these sources, viz.: the Hudson River, a few lakes and ponds adjacent to the Hudson or near the line of some of the suburban railways, and Maine. The Hudson constituted the principal source of supply, and the Maine supply was, as a rule, drawn upon only when the ice season in this region had been a poor one and the domestic stock ran low. The total storage capacity of the ice-houses along the banks of the Hudson reached the enormous amount of more than three million tons. Dr. Prudden then went on to speak in more or less detail of the various bodies of water from which the ice for New York is taken. In describing Rockland Lake, the ice-houses of which have a storage capacity of about 150,000 tons, he stated that the possibility that the drainage of a number of small dwellings near it might reach the lake without that thoroughness of soil filtration which a strict attention to hygiene demands, seemed worthy of consideration.

In regard to the Hudson River, he said that it must be borne in mind that this stream is in fact a great estuary of the sea, and that the water is at times brackish as far up as Poughkeepsie; while the influence of the tides is felt by the rise of more than a foot at Albany. The fall of the river from Albany to New York is so slight that at times the current at Albany is reversed, and runs northward for some hours. The river for a few miles below Albany is really a long narrow archipelago, so besprinkled is it with low islands of sedimentary origin. The main ice harvesting fields lie between Poughkeepsie and Troy, and at the upper part of this section is the city of Troy, emptying its eight million gallons of sewerage daily into the river, already charged with contributions from Cohoes and Lansingburgh, to say nothing of the impurities brought by the Mohawk from the west. A few miles below Troy lies Albany, with over 90,000 inhabitants and an efficient sewage system pouring directly into the river. Having spoken of other sources of pollution, he stated that the Hudson just below Albany had been shown to consist of about 1100 parts of dirty river water from Troy and 1 part of Albany sewage. "But," he went on to say, "if one should require more proof of the filthy condition of the Hudson just below Albany, he has only to stand on some summer or autumn day, when the tide is at the ebb, on the shores of the so-called Albany basin, a walled inclosure of some thirty acres made for the purpose of increasing the city dockage, and into which fifteen sewers empty, carrying the waste of over thirty thousand people. Under these circumstances the observer will certainly be rewarded with both ocular and olfactory evidence of a most convincing nature. Yet within sight of the walls of the Albany basin, down the stream, stands one of the houses, with its sewage-laden ice-fields, in which this delectable harvest is stored for the comfort of a considerable number of New Yorkers. It was from this region that the ice actually being distributed in an outlying district of this city, was found to contain from 20,000 to 50,000 living bacteria to the cubic centimetre—that is to about one-third of a teaspoonful." Taking the Hudson River ice altogether, it was found that about two-thirds were cut within thirty miles of Albany, and nearly one-fourth within twelve miles.

Having referred to certain other unfavorable conditions of the upper Hudson, he said that, on the other hand, it should not be forgotten that in the comparatively still water behind the islands and dykes there was given tolerable facility for sedimentation of the bacteria, by which means, as experiments showed, a considerable proportion of them might settle down from the upper strata of the water. It was this latter consideration which warned us against an unqualified condemnation of the Hudson River water for ice purposes, since only careful series of experiments could show at what distance below a source of pollution the water might have so far deposited its bacteria (if it did so to any considerable degree) as to render it fit for ice harvesting purposes. In the meantime we must look at the ice itself, and see to what extent bacterial contaminations actually exist in the product from various parts of the river.

Dr. Prudden has made nearly three hundred complete analyses of ice taken at different times from the Hudson, and from the ponds and lakes, and taking the results of all these analyses, he finds that the average number of living bacteria for one cubic centimetre is 2033. He also found that different parts of the same block of ice may contain vastly different quantities of bacteria. In his series of ice analyses the ice was carefully grouped into two classes: first, clear ice, or that which contained but few scattered bubbles, and, second, snow ice and that with very bubbly streaks. Having exhibited charts of his analyses of the Hudson river ice, he said that it was evident from these that by natural agencies the water of the river is freed to a certain degree from bacteria after running for some distance. But the ice did not, as one might expect, get freer and freer from bacteria as the distance from Albany increased, but from six to fifty miles below Albany, with unimportant local fluctuations, remained very nearly the same. A very much more extended series of experiments, he thought, would be necessary before he could determine with any very great degree of accuracy how far the river has to run below a source of sewage pollution in order that the water may by freezing and other natural agencies free itself to a proper degree from its bacterial contaminations, or if it does so at all.

In a series of analyses of the two forms of ice in the same cake, tabulated for this purpose, he found that on the average the snow ice contained about seventeen times as many bacteria as the clear ice. The very bubbly streaks contained, as a rule, many more bacteria than the adjacent clear ice, but still not as many as the snow ice. It is extremely probable that the excess of bacteria in the ordinary snow ice is due to the washing down of material from the shores during rains, or the settling of organisms from the air. The bacterial excess in the very bubbly streaks might perhaps be explained by the fact that certain species of bacteria are capable of making rapid movements in water, and are also great lovers of air. It was possible, therefore, that when the air bubbles collected underneath the ice, these made their way through the water toward them, and got caught there when the water froze. The average number of bacteria in ice from all sources taken together, he went on to show, was far beyond the general

standard which even a moderate degree of purity would allow.

There now remained to consider the most difficult, and at the same time the most important part of the subject, viz., the interpretation of the results obtained, and the suggestion of its practical lessons. The natural situation of the ponds and lakes was good, and evident sources of contamination with sewage and excrementitious material could be largely excluded. As regards the lake and pond ice, then, it could be concluded that, although the product from some of them contained a larger number of living bacteria than was consistent with the highest hygienic standard, the conditions could be readily changed, so as to render them quite unimpeachable; while in some instances the ice, so far as Dr. Prudden's analyses showed, was well within the ordinary standards of excellence.

The Hudson River, on the other hand, stands on an entirely different basis. Now, given the Hudson River ice as we find it, and knowing what we do of the character of the stream, what actual danger have we to fear, he asked, from the use of the ice for drinking purposes? A considerable number of the bacteria which it contains are undoubtedly the relatively or absolutely harmless species which may exist in any natural river or spring water; but a large number might with equal certainty be assumed to originate from animal excreta. Here again it was scarcely to be doubted, although not yet demonstrated, that a considerable proportion of the bacteria existing in sewage, and coming from human and other animal excreta, and the varied putrefying fluids which form a prominent ingredient in the waste of populous towns, might not be positively dangerous if taken into the body in moderate quantities in drinking water. On the other hand, in every large town, like Albany, and in smaller towns in lesser degree, there is a considerable number of bacteria which are the cause of serious disease, more or less constantly passing into the sewers, and here the use to which this diluted sewage should be put, involved the interests of the public health.

There are some varieties of diarrhœal disturbance, sometimes severe and sometimes mild, which often seemed to depend upon impure water or ice; but whether they are occasioned by sewage or other bacteria, or by organic matter, or by both, is not yet certain, so that this class of cases can be left out of view. Fortunately, cholera and anthrax, both bacterial diseases transmittable by drinking water, are not ordinarily present in the sewage of the region under consideration; so that these diseases, although they should not be ignored by those having the public health in charge, did not fall within the scope of the present study. But there are two very common and very important bacterial diseases which are almost constantly present in large towns like Albany and Troy, and frequent enough in villages like those which lie along the upper Hudson. These are typhoid fever and the affections associated with acute suppuration, and the so-called blood-poisoning from wounds, or pyæmia. Now it is unfortunately true, as Dr. Prudden's studies had shown, that the bacteria causing these two forms of disease are markedly resistant to the temperature at which ice forms. The most important of these is the typhoid bacillus. For the past three years the number of deaths from typhoid fever in Albany (the health records did not show the number of cases), during the ice-forming and harvesting months—that is, from December to March—had averaged about sixteen for each year. Reckoning the death-rate at thirty per cent. (which was unusually high), there would be each year about fifty cases of typhoid fever from whom excreta would pass directly into the Hudson River from Albany alone during the ice-forming season. He had been informed that in Albany, as in most American towns, both in hospital and private practice, there was no systematic disinfection of the typhoid discharges. The bacteria of typhoid fever had been repeatedly shown to be capable of living for a considerable time in water, and according to Frankland, and other authorities, they might even proliferate in water. Dr. Prudden had also found, as had been stated, that when frozen up in ice, a certain proportion of these bacilli may live on for long periods, ready, when thawed out and placed under favorable conditions, to go on growing or proliferating just as before their hibernation.

Here, then, as it seemed to him, was the positive source of danger in the use of the Hudson River ice directly for drinking purposes, without some form of filtration, at least until it could be ascertained at what distance, if at all, below Albany and other towns whose sewage drains into the river near the ice fields, a safe degree of bacterial purification of the water by natural means might have occurred. The typhoid bacillus had not been detected in the Hudson River ice, and to find it, even though present in considerable numbers, in its mixture with other species and in the large dilution which exists, presented very great practical difficulties. It had been detected in several instances in water suspected to be the cause of outbreaks of typhoid fever, but the conditions for its discovery were much more favorable than in the present case.

If, on the other hand, we looked at the cases of typhoid fever as they are constantly occurring in New York and the adjacent towns in which the Hudson River ice is used, he did not find, and we should not expect to find, any marked excess of typhoid fever among those who habitually use ice for drinking purposes, over those who do not. This was because the sanitary surroundings of the classes which use little ice are so much less favorable, as a rule, than those of the habitual ice consumers that other sources of infection, equally or even more efficient, would abundantly cover any difference in the number of cases in the two classes that might otherwise be noticeable. Whether infection through impure ice is of frequent or infrequent occurrence is not now known. That it is not, however, so important a factor in the transmission of the disease as to render the typhoid fever statistics of New York worse than those of other towns whose residents use clearer ice, is certain. But there was a considerable number of cases of typhoid fever in which the most painstaking examination of the sanitary surroundings of the victims, and their personal contacts, failed entirely to account for the origin of the disease; and some of these might well be cases of ice poisoning from the typhoid bacillus.

It is to be remembered in considering this, as all other bacterial diseases, that the bacteria themselves are only one factor in determining the disease. There is to be taken into this account also the number of

the bacteria—that is, the size of the dose—and the conditions of prediposition or susceptibility of the individual. Unfortunately, however, we know nothing about the number of typhoid bacilli necessary to induce the disease in man, and we are nearly equally ignorant concerning the nature of the predisposing conditions. So, then, if we summed up what we really knew about the relation of Hudson River ice to typhoid fever, we could only say that it is certain that the ice from some parts of the river must contain the bacteria of typhoid fever, and that these may be taken into the system in a living condition with ice water. Whether the necessary relationship between the number of bacteria thus taken and the condition of predisposition of the individual occurred frequently or infrequently, or even occurred at all, we could not positively say; but the grave character of the disease should warn us against indifference and impress upon us the urgent necessity of the adoption of such measures as will secure the consumer against even the possibility of such infection.

With the bacteria of suppuration and pyæmia the case seemed much less serious, because of the very general antiseptic treatment of wounds now in vogue; but the fact that the staphylococcus pyogenes might be in the Hudson River ice in a living condition should not be lost sight of.

Finally, Dr. Prudden considered that practical measures, as these theories seemed to show, should be adopted in order to guard against a not only possible, but very probable, source of danger in the Hudson River ice. He would not leave out of sight the great and important private and corporate interests which are involved in the supply and consumption of ice; nor would he wish in any measure to suggest by these studies a curtailment in the consumption of ice, even for drinking purposes. The measures which might be adopted in view of the present condition of affairs were of two kinds; *first*, such as would come under the supervision of health officers, and, *second*, those which belonged in the province of the individual consumers.

In the first place, then, it would seem necessary that the State Board of Health, or some other authorized body, should be placed in charge of the ice harvesting fields, and, by a system of inspection not less strict than that which should exist in the case of the ordinary water supply, determine which, if any, of the sources of ice supply are so situated as to imperil the health of consumers of ice. In view of Dr. Prudden's investigations, this would appear to be comparatively simple in all cases except that of the Hudson River. Here it would be necessary to establish by a most thorough scientific examination the distances from all sources of sewage pollution at which it might be safely assumed that the water freed itself from bacterial and other impurities sufficiently to form safe ice.

It might in this way be possible to remove any chance of danger by permitting the questionable or bad ice to be sold only for cooling purposes, if such a classification were practicable, and thus not materially interfere with the interests of the ice companies. A compulsory system of disinfection of excreta in infectious diseases might be instituted, as it has been in other countries in which the purity of the water supply is under constant supervision.

As regards the precautions which the individual consumer might adopt, it was evident, from the facts that had been brought forward, that if he could be certain that his supply came only from the lakes or ponds, he would secure for himself a fair degree of immunity from danger. Remembering that the larger and more responsible ice companies did not, so far as he was aware, cut ice in the immediate vicinity of Albany, but at a considerable, and in most cases at a great distance below, the householder might eliminate to a large extent his hazard by finding out as accurately as possible just what part of the river his ice came from. Whatever the source of supply, however, the large excess of bacteria which in almost all cases the snow layer harbored, over transparent or sparsely bubbly ice, would render imperative the avoidance of snow ice for any but cooling purposes. Still, it is not to be forgotten that perfectly clear ice may contain very large numbers of living bacteria.

A variety of devices could be adopted in the use of ice for cooling drinking water, so as to avoid placing it in the water itself; or, recourse might be had to artificial ice, made from pure water, which, as abundant experience had shown, could be furnished at a cost not greatly exceeding that at which the natural ice was furnished. This artificial freezing of pure water is already done in some of the continental cities in which the natural ice contains large bacterial impurities.

From these studies Dr. Prudden said it would appear that we now know with tolerable certainty just what series of questions are to be answered, and what investigations made, in order to decide upon the safety of any given source of ice supply; but these detailed investigations could only be made under the sanction and direction of the public authorities.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, March 3, 1887.

THE PRESIDENT, THOMAS M. DRYSDALE, M.D., IN THE CHAIR.

DR. D. LONGAKER read a paper on the

TREATMENT OF LABOR IN CONTRACTED PELVES.

The most frequent forms of contracted pelves are the flattened and the generally contracted; in the former the conjugate diameters alone are shortened, and in the latter all are less than normal. The paper was limited to the consideration of those cases where the narrowing is moderate and not sufficient to render the birth of a living child impossible; this embraces flat pelves having a conjugate of three inches or a little less, and generally contracted pelves having a conjugate of at least three and one-third inches. He gave a description of the peculiarities of the flat non-rachitic pelvis, and the flat rachitic pelvis, and reported six cases.

He urged that it will be best to restrict version to cases in which there are other reasons for it than the mere existence of flattening; some of these being the presence of the occiput on the smaller side of an unequally contracted pelvis, the sagittal suture over the symphysis pubis, presentation of an ear, and prolapse of the cord. He extolled the axis-traction forceps in these cases and exhibited an instrument of his own devising, which he had used in two cases. He had no

hesitation in applying the forceps high up in the uterus when the head is arrested at the brim of the pelvis, and cited fifteen cases of such application in proof of his opinion. After some remarks on estimation of the conjugate diameter, he concluded with the following propositions:

In the flat pelvis and in the flat rachitic pelvis decided degrees of disproportion at the brim may be overcome by the natural efforts when the head presents.

In the forceps, and especially in the axis-traction forceps, we have the means of extending still further the possibilities of successful delivery when the head is arrested at the brim.

The forceps, judiciously used, is a safe instrument for mother and child.

The existence of contraction of the pelvis in itself is no reason for preferring version.

In flat pelves with a conjugate diameter of not more than three and a fourth inches and not less than two and three-fourths inches, premature labor should be induced.

DR. HIRST differed from Dr. Longaker on two points: The propriety of always applying the forceps in flat pelves before the head has become engaged instead of turning and delivering the breech; and, on the propriety of applying the forceps over face and occiput in transverse positions of vertex presentations, as in this latter operation the biparietal diameter must be increased.

DR. H. A. KELLY agreed with Dr. Hirst. He considered the paper of Dr. Longaker's a very timely one, which in all its leading features he most heartily commended. It is certain that an intelligent use of the axis-traction principle is destined to revolutionize the treatment of labor in contracted pelves. In cases in which craniotomy has been the custom, axis-traction will save many lives. A few important rules should be borne in mind. First of all, Dr. Kelly would differ from the speaker most decidedly in one practice and lay down the rule that "axis-traction" cannot be applied to the head above the brim. There is no axis above the brim and any traction on the rod merely caused the head to rotate around its own axis, but can under no circumstances be efficient in inducing it to engage. Axis-traction applies to heads engaged in the pelvis. Again, the ordinary use of this principle should be to *assist the pains*. Further, it is important in using Tarnier's forceps of this model to attend constantly to keeping parallel the shanks of the prehensile blades and the proximal end of the traction rod.

If the handles of the forceps rise during a traction, and it is felt by the examining finger that the head has not really advanced, then either the head has rotated in consequence of an excentric grip or the forceps has slipped, and here lies the great difficulty of the Tarnier instrument. The frequency of this accident, together with some other considerations regarding the mechanical construction of the instrument have demonstrated, to my mind, the fact that it is only approximately axis-traction. He exhibited a pair of forceps with which he delivered a dwarfed woman two weeks ago of a full-sized living female child through a three inch conjugate. This pair of forceps was shown him first by Dr. Porak, of Hospital St. Louis, Paris; and he believed that by them he attained the most perfect axis-traction which has yet been devised. The principle is applied in a very simple manner to any long forceps. Each of the four blades of the spoon is perforated with a small oval hole as near the centre of the oval of the spoon as possible. Two long tapes are passed through the hole of one side, the four free ends are brought down under the forceps, and after their application, hang out at the vulva. These ends are brought through a hole at the extremity of a traction rod curved as ordinary traction rods, with the usual transverse handle at the outer extremity; this is then drawn up to the head and the ends of the tapes fastened on the rod at the apex of the angle where the vagina turns down into the perineal curve. The advantages of this forceps are many. 1st. The application is extremely simple. 2d. It can be applied to any forceps. The Tarnier can not be, as it is only suitable to narrow tubed instruments. 3d. The child's head is grasped by the centre of its figure owing to the position of the attachment of the tapes. 4th. This same factor renders unnecessary the screws which are so dangerous in Tarnier's forceps, as the traction does not tend to force the blades apart but approximates them. 5th. The perfectly movable connection between forceps and rod—*i. e.*, the tapes—allows the head to flex and follow the curve of the pelvic canal.

He had used Tarnier rods and the Pollet forceps on the same patient several times and his experience accords with that of Dr. Porak, where the Tarnier rods fail and the forceps slip, the Pollet forceps holds and works easily.

An interesting incident of a short time since shows well the comparative value of axis-traction. He described his Pollet forceps to a friend who has a large obstetric practice. He soon called him out with a note, "bring your French forceps." He found the head well engaged but wedged tight. He had made many well-directed vigorous efforts with his own forceps and finally gave up in despair, producing no effect. He applied the Pollet forceps and with a moderate traction on the rod the head moved gently and steadily until it came directly to the outlet without apparent effort.

DR. LONGAKER had not had time to read Dr. Winter's article in the original, *Zeitschrift für Geb.*, but gained his information from an editorial in THE MEDICAL NEWS, which stated that an expectant plan of treatment and forceps are advised for primiparæ and early version for multiparæ.

He still thinks the occipito-frontal application of the blades does not appreciably increase the biparietal and bitemporal diameters of the fœtal head. It may increase the vertical diameters as the cervico-bregmatic and sub-occipito-bregmatic. A simple experiment on the manikin of Budin demonstrates the truth of this proposition. A full term fœtus, stillborn, was placed in position at the brim, the sacrum being thrown forward so as to make the conjugate measure three inches. With the axis-traction forceps the relative disproportion between the head and the pelvis, which was considerable, was easily overcome. With blades having a sufficiently marked cephalic curve the compression need be but slight.

There seems to be some misconception as to what is meant by the head being at the brim of the pelvis. The head is at the brim until the greatest transverse

diameter, the biparietal, has passed the plane of the superior strait. With a head entirely above the superior strait the use of any forceps would hardly be appropriate. If fixation of the head could not be secured, version would be the best measure.

He did not see how traction exerted by means of tapes could be more efficient than with stiff rods.

The fixation screw is a necessity, there being no free hand to make the necessary compression by the handles. Moreover, it is not objectionable. Continuous pressure is avoided by relaxing the pressure in the intervals. This was one of the chief objections urged by the late Albert H. Smith.

A little reflection and application of well-recognized principles would dictate the proper method of applying traction. Simpler axis-traction forceps have been devised by Bruns and by Braun.

As version is in almost universal favor in Germany and Vienna these instruments have little chance; they are scarcely used there.

DR. W. H. PARISH reported a

PORRO-MÜLLER OPERATION,

performed by Drs. O. H. Allis and W. H. Parish because of an impacted shoulder presentation. Mary L., æt. twenty-six years, of small stature, but good general health. When about six months pregnant she had been hooked by a cow and narrowly escaped a miscarriage. She reached full term and had been in labor seven days when Dr. Allis was telegraphed for. The membranes ruptured four hours after the pains began, on the sixth day the pains became more severe and the cord prolapsed; about the same time a hand protruded from the vagina. The child died about this time. Version was tried without and with anæsthesia but could not be effected. The child was evidently of large size, the patient was restless, exhausted, and with a pulse of 120 per minute. The pains were constant and the uterus was firmly contracted about the child. The patient's surroundings were unfavorable, the ignorance and poverty of the family rendered proper nursing impracticable. An offensive, sanious fluid was escaping from the uterus; the cervix was rigid and but slightly dilated. It seemed impossible to deliver the patient by either cephalic or podalic version, and the conclusion was made that evisceration was not advisable because there was every reason to believe that the uterus had done itself irreparable harm by reason of its prolonged retraction against the eminences of the child. The contusion incident to the retraction and the admission of atmospheric air over a period of seven days, with the character of the discharge, rendered it certain that gangrenous changes had been going on in the endometrium and placenta, and that septic inflammatory action of the uterine lymphatics had already begun. The patient was in a condition of exhaustion. Evisceration alone would not have sufficed to secure delivery, it would have been necessary to have bisected the child in the lumbar region and to have removed separately the lower and upper sections. The condition of the uterus and the small size of the pelvis would have rendered this procedure a lengthy and an exceedingly difficult one, and would have added additional serious injury to the uterine tissues. The removal of the child would have left a putrefying endometrium and septic lymphatics.

Dr. Parish felt certain the patient would die if thus delivered. All present thought Cæsarean section indicated. The operation was performed by Dr. Allis. The uterus was elevated from the abdomen and a rubber tubing was placed about the cervix securely controlling the hemorrhage. Escape of fluids from the uterus was guarded against by means of warm antiseptic pads adjusted about and over the abdominal incision. A vertical incision was then made and the child extracted without difficulty, the placenta was not in the line of incision and there was no hemorrhage. Two transverse pins were carried through the cervix and a constricting wire was substituted for the rubber tubing about the junction of the cervix with the body of the uterus. With the uterine body were removed also both broad ligaments and their contents. The uterine stump was secured externally by means of the transfixion pins, and wounds closed by carbolized silk sutures. Antiseptic measures were taken throughout the operation, but the spray was not used. Immediately after the operation the pulse was 130 per minute.

The patient died in forty-eight hours, apparently from heart failure.

DR. R. P. HARRIS remarked that the Cæsarean operation has been performed in the United States in cases of impaction of the fœtus in a transverse position, twelve times. In eleven cases the fœtus was dead. In the twelfth it was saved, but the operation was believed to have been uncalled for by a physician who performed laparotomy with success after the woman had ruptured her uterus, in her next labor. The pelvis had been computed to have a conjugate and a transverse diameter of three inches. In one other of the twelve cases the pelvis was deformed, and the woman saved. The arm was protruding in seven cases, five of which recovered. In two the shoulder presented, one saved; and in three the presenting part is not named. Of the twelve cases, nine, or seventy-five per cent., recovered. Of the three cases lost one was ninety-six hours in labor, three days in charge of a midwife; another was twenty-six hours under a midwife who had given ergot and ruptured the membranes; and the third had been long in labor, but time not stated. Her death was caused by fright and exhaustion; she rose from her bed to defend her mother against her husband who had come home drunk on the third day.

He knew of but one case of impaction in Europe, in which the Porro operation was performed, but in this the pelvis was deformed. The operation was by Fehling, of Stuttgart, and the woman was saved. Putridity of the fœtus may require the removal of the uterus in a case of impaction. One woman was saved without its removal in the United States after seven, and another after ten days of labor, by uterine suturing to prevent escape of fluid; but it is safer to remove the organ where there is danger of poisoning, and particularly where the patient appears to be already threatened with it. In the Porro case of Candido Ramello, of Turin, the woman had been six days in labor, the fœtus was putrid, and the mother in great danger of septicæmia. The removal of her uterus with its contents was followed by an improvement of her symptoms and she recovered.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PRACTICE OF MEDICINE.

Stated Meeting, March 15, 1887.

THE CHAIRMAN, E. DARWIN HUDSON, JR., M.D., IN THE CHAIR.

DR. C. E. BILLINGTON read a paper on

LOCAL TREATMENT IN DIPHTHERIA.

Local and constitutional treatment in diphtheria, he said, are each of vital importance as the essential complement of the other. Having mentioned that on account of the magnitude of the subject he did not feel that he could do justice to both in the limits prescribed to him, he stated that he had selected the local treatment as being that in regard to which there is the greatest diversity of opinion in the profession, and then proceeded to inquire what are the objects rationally aimed at in the local treatment of diphtheria.

He, accordingly, spoke of the factors to be dealt with in this disease; referring first, to the entrance into the system of a specific poison or contagion, which in many cases seems to act by direct local implantation upon some portion of the air-passages. This naturally suggests the local use of antiseptics.

The second factor, he said, is inflammation. This, if preëxisting from other causes, is very apt to invite the disease. Inflammation is an essential constituent of diphtheria, and ceases only with the cessation of the disease itself. The therapeutical indications furnished by the inflammation are, *first*, the treatment of catarrhal trouble, and, *second*, the employment of the most active antiphlogistic remedies, local and general, in the hope of cutting short or modifying the course of the disease. There is also an important contraindication, viz., the avoidance of all local applications which have the effect of causing irritation of the parts.

The third factor is a membranous exudation. This, he thought, is probably an invariable element, though it varies very greatly in extent and in its characteristics in different cases. Besides acting as a local obstruction, the membranes have the effect of covering up the diphtheritic poison, thus preventing whatever antiseptic measures which might be resorted to from accomplishing their purpose properly, and permitting septic absorption to go on. The presence of diphtheritic membranes, however, is sometimes the lesser of two evils; the greater being the premature removal of the membrane, whether intentional or accidental. When this occurs, the general inflammatory action and the membranous exudation are both apt to become more marked than before. Indeed, the forcible separation of the membrane may be attended with very considerable danger. The destruction of the membrane by prompt caustics or the actual cautery has been repeatedly resorted to, in the hope of substituting a simple ulcer for the diphtheritic deposit; and undoubtedly this is the true indication present in cutaneous diphtheria. But this plan is difficult or impracticable as regards the mucous membrane of the air-passages; and the use of such agents has now been discarded by the great majority of the profession. Even if the rapid destruction of the membranes could be accomplished without setting up more active inflammation, Dr. Billington believed such a measure would be detrimental, since the membranes undoubtedly serve to protect the tissues beneath from external irritation. When the membrane is very superficial, it can be removed with but little danger; but when this is the case recovery is generally sure to take place anyway. In the severe cases, however, the sudden removal of the membrane would expose a raw and irritated surface, and the sequel would almost surely be an increased absorption of the diphtheritic poison.

The rational indications in regard to the membrane, are, first, to effect its gradual softening and thinning by the local use of non-irritating solvents; and, second, in exceptional cases, in which its prompt removal is necessary, to accomplish this by such means as will cause the least irritation. The true object, in treating diphtheria, Dr. Billington went on to say, is not so much to cure the disease as to bring the patient through it alive.

The fourth factor in the disease is the absorption of the poison, with its attendant evils. In the earlier stages of diphtheria the condition of the throat is not distinguishable from that existing in ordinary angina. The absorption of the poison begins with the exudation, and it seemed to him that the disease is at first probably a local one. Dr. Billington here referred to the series of cases reported by him in the papers read by him before the Academy in 1876 and 1880, in which the plan of local antiseptic treatment was carefully carried out. The result was that in a large number there was little or no evidence of constitutional disturbance; while the number of deaths from toxæmia was extremely small. As shown by his experience, nature is capable of tolerating and successfully eliminating a certain amount of the poison absorbed,

The fifth factor is the emanation of poison from those affected with the disease.

The indications of local treatment are:

(1) To subdue inflammation.

(2) To effect a gradual and superficial thinning and softening of the membranes.

(3) By antiseptic measures to minimize septic absorption.

Passing on to speak of the means by which these ends are to be accomplished, he said that, in the first place, the frequent swallowing of water, milk, or other bland fluid, has a good effect in washing the parts clean. Ice and iced beverages also have a beneficial effect upon the inflammation present. Of medicinal agents, tincture of the chloride of iron and chlorate of potassium have long been regarded by many as holding the first place. When employed with glycerine, in the proportion of one to eight, the tincture of iron is very grateful to the taste, and can be given every hour, with a little water. The chlorate of potassium may be employed in the following formula:

℞.—Potass. chlorat.	gr. xl.
Glycerinæ	f℥ss.
Liquor calcis	f℥iiss.

Dose, a teaspoonful.

In certain cases the tincture of iron is found too irritating to the throat. While Dr. Billington regards this agent as of positive value, he does not think it essential to the successful treatment of diphtheria. There are other agents which may be employed in its

place, and, among those to which he referred, benzoate of sodium and bromine. As to gargles, which are frequently recommended by writers, many patients are too young to use them at all, and even in the older ones they are wearisome and inefficient.

The use of the syringe is more generally applicable. Any ordinary syringe holding half an ounce or an ounce will answer, and warm water with common salt in solution is, perhaps, as good as anything else to employ with it. Still, the use of the syringe has its limitations and dangers. The pharynx, with its delicate mucous membrane, was never intended for rough treatment, and hence it is necessary to proceed with great gentleness. This method should never be practised when any of the membranes is partially detached. In nasal diphtheria the syringe has been so long in use that it is unnecessary to speak of its advantages; but here, also, it is necessary to use the greatest caution. The principal difficulty with it arises from the resistance of young children; but this will be found to vanish if proper care is taken. Dr. Billington here quoted from one of his papers a description of the method which he had found most serviceable for holding the child while the injections were being made. The fluid should be thrown in with sufficient force, and the injection kept up long enough, to cleanse thoroughly the passages. He thought that the physician should always use the syringe himself, to be sure that the procedure is properly performed, and he thought two or three times a day often enough to repeat it. More frequent resort to it only tends to exhaust the patient, and results in increased irritation of the parts. Some physicians are in the habit of repeating the injections as often as every hour; but, as a rule, he thought this was a grave mistake. The frequency should never exceed the tolerance of the patient.

Spraying, he went on to say possesses certain advantages in the fact that the method is gentle and unirritating. In nasal diphtheria, however, it is not of as much service as syringing. For this form of the disease Delano's or some other similar atomizer, is the most convenient, and care should be taken not to insert the nozzle too far into the nostril. As regards solvents for this membrane, lime water is of no service if it is necessary to secure a very rapid effect; but in general it is of positive therapeutical value by its gradual action. A simple formula is ten minims of carbolic acid to four ounces of lime water; which may be employed every half hour.

Lactic acid, pepsin, and other similar agents have often been recommended, but their practical value as solvents has not as yet been satisfactorily demonstrated. Trypsin and papayotin, however, have been used with good results, and the following formula for trypsin has been found useful:

℞.—Trypsin	gr. xv
Soda bicarb.	gr. v
Aquæ	f℥jss

Papayotin is used in a five per cent. solution. Inhalations of vapors are often resorted to as adjuncts. It is to be remembered, however, that the vapor of lime water when heated is simply water, and that to get a vapor really charged with lime it is necessary to have slaking lime. Turpentine, eucalyptus, and other substances have also been employed in this way. As an escharotic, nitrate of silver is to be recommended on account of its superficial action. Tincture of the chloride of iron in the proportion of two to one and Monsell's solution are also of service in certain cases.

DR. A. JACOBI remarked that it had been proposed to treat diphtheria with the galvano-cautery, but this presupposed that the membranes are always within reach of this agent. Caustics are objectionable except when their action can be limited strictly to the affected tissues. Nasal diphtheria is very apt to prove fatal unless local treatment is resorted to at an early period. The treatment which he practises consists of repeated injections, kept up at short intervals both day and night, whether the glandular swelling is great or not. The whole procedure, including the syringing of both nostrils, can be accomplished in half a minute, but great care should be taken to do it properly. Lime water, boracic acid, carbolic acid, and bichloride of mercury, the latter in the proportion of one to ten thousand, are useful for this purpose. Spraying can often be alternated with the injections with advantage.

Dr. Jacobi said that he had formerly supposed that in order to have any effect upon bacteria it was necessary to use very powerful agents; but later investigations have shown that this is really not the case. While permanent irrigation of a three per cent. solution of carbolic acid is dangerous, Koch has shown that while they are not destroyed, the activity of bacteria is checked by a carbolic solution of a strength of only one to twelve hundred. It is his invariable practice to have the room constantly filled with the vapor of either turpentine or carbolic acid, or both; a tablespoonful of crude turpentine or a teaspoonful of carbolic acid being added from time to time to a pot of water heated at the fire-place, and care being taken that the vapor should not be allowed to escape up the chimney. It is better not to heat the water over gas, on account of the oxygen that is thus withdrawn from the atmosphere of the sick chamber.

(*To be concluded.*)

CORRESPONDENCE.

DEATH-RATE IN AMERICAN AND EUROPEAN LYING-IN HOSPITALS.

To the Editor of THE MEDICAL NEWS,

SIR: In the issue of March 5th of THE NEWS is found an article by Dr. Barton Cooke Hirst, on "The Death-rate of Lying-in Hospitals in the United States," in which he has taken the trouble to collect the statistics of thirty-four lying-in institutions in the United States for the six years 1880–85, and finds an average mortality of 2.59, and one of more than twice that in some of them. Then he compares this result with those obtained in institutions abroad, and finds great reason for dissatisfaction with what we have done in this direction, in this country.

If the publication of these tabulated statistics should have the effect of stirring up some institution that is thus exposed with a particularly bad record, and bring it to amend its ways, I can only hail Dr. Hirst as a welcome collaborator in a field in which I have been working for years. But in my opinion the plan of the paper

is wrong, and some of its details give an entirely erroneous idea of what has been done in the way of improvement of lying-in hospitals in this country. I will only take the records attributed to the two largest institutions of the kind in the United States, namely the New York Maternity Hospital on Blackwell's Island, because I am Visiting Obstetric Surgeon to that hospital, and have initiated the new era there, and the Boston Lying-in Hospital, because Dr. William L. Richardson has publicly stated[1] that the marked improvement in the results obtained in that institution, was brought about by adopting many of the suggestions contained in my first paper on "Prevention of Puerperal Infection," published in the *Medical Record* of Dec. 29, 1883.

Dr. Hirst, in his table, quotes the New York Maternity with 2842 confinements, 2.92 per cent. deaths, and 1.82 per cent. deaths from sepsis, and the Boston Lying-in Hospital with 1599 confinements, 3.81 per cent. deaths, and 3.10 per cent. deaths from sepsis. Now it happens that the author for his statistics has just chosen six years, the first four of which were particularly bad and pressingly called for reform, and the last two of which represent the new treatment begun at the New York Maternity on the 1st of October, 1883, and adopted, immediately after it had been made known, in the Boston Lying-in Hospital. This gives as clear an idea of the real condition of these institutions as if a naturalist, instead of describing a rattlesnake and a blindworm, should strike a balance, and content himself with the description of an adder. Dr. Hirst seems to have had some misgiving in this respect, and in order to show that "an earnest effort toward improvement will accomplish much," he gives the death-rate by years "in two large hospitals." These two large hospitals are the Boston Lying-in Hospital, and the Philadelphia Almshouse. Of the New York Maternity, the largest lying-in institution in the country, which has more confinements than the two others together, he says nothing—and still it was this latter hospital which took the lead in the United States in showing that even in comparatively large institutions, drawing their patients from the very lowest layers of female society, delivery can be made as safe as in the palatial residence of rich and healthy virtue.

Dr. Richardson, in a paper on the "Use of Antiseptics in Obstetric Practice," published January, 1887, in the *Boston Medical and Surgical Journal*, has shown how the results obtained during the last three years, 1884–1886, in the Boston Lying-in Hospital and the New York Maternity Hospital are almost identical. The strange omission, in Dr. Hirst's paper, of the New York Maternity, in regard to improvements is so much more surprising, as I, at least three times, have called public attention to the fact. Beside the article in the *Record* more than three years ago, we have my paper on "Puerperal Diphtheria," read in 1885 before the American Gynecological Society, and finally, my *Guide in Antiseptic Midwifery*, published in 1886. By taking cognizance of these publications, either directly or by one of the numerous abstracts that have been made of them in the medical press of all parts of the country, Dr. Hirst would not only have seen that the improvement in obstetical practice he calls for has begun and advanced considerably, but likewise how the change was brought about, a circumstance to which there is not found the slightest allusion in his paper.

Beginning at the first date as Dr. Hirst's table, and going on till the end of last year, I find in the Maternity Hospital a record that, when properly divided in its two natural groups, contains a lesson that cannot fail to make an impression on any fair-minded man who is unfortunate enough to have a high rate of mortality in a lying-in institution entrusted to his care.

FIRST GROUP.

Year	Confinements.	Deaths.	Deaths from sepsis.
1880	149	8	5
1881	382	10	8
1882	431	14	9
1883	447	30	20
Total,	1409	62 (4.40 per cent.)	42 (2.98 per cent.)

SECOND GROUP.

Year.	Confinements.	Deaths.	Deaths from sepsis.
1884	522	8	4
1885	537	3	0
1886	446	5	1
Total,	1505	16 (1.06 per cent.)	5 (0.33 per cent.)

The great change in the management of the service was begun on October 1, 1883, and during the last three months of the year 102 women were confined without a single death, whereas during the preceding three months 133 women were confined, 15 of whom, or 11.20 per cent., died, and during the last month before the change was made 51 women were delivered, 10 of whom, or 19.6 per cent., died. The difference between the two groups would, therefore, be still greater if we draw the line between them at October 1, 1883, instead of January 1, 1884. Still, even as the groups are limited in order to conform with Dr. Hirst's table, we see that *our mortality from all causes has been brought down to less than one-fourth of what it used to be, and the deaths from sepsis even to one-ninth of what it had been during the preceding four years.*

How the change was brought about, it is not here the place to consider; those interested in it will find all the details in my above mentioned *Guide in Antiseptic Midwifery.*

How far this movement has spread I cannot tell; but I have reason to believe that the treatment has been adopted with immaterial modifications in very many places, Dr. Richardson, of Boston, Dr. Lusk, Dr. Clark Thomas, and Dr. Emily Blackwell, of this city, adopted it immediately in the institutions under their care, and by request from prominent obstetricians all over the States I have sent them specimens of my perineal pads. I should, therefore, not wonder if in many other of the institutions found in Dr. Hirst's list, a new era of safe delivery had begun. These statistics are unjust to our country, and give the reader the erroneous idea that they represent the present status of our lying-in institutions. Whoever will use the statistical method now in dealing with the question of lying-in hospitals, must first of all examine if and when true antiseptic treatment has been adopted in them, and compare the results obtained before and after that period.

Before concluding, I would like to say a word about the future. When Dr. Hirst says that "we should in every lying-in hospital strive, at least, to equal the results

[1] Trans. Amer. Gynecological Soc., vol. x. p. 114.

obtained by Tarnier in 1884, when in the Maternitié he had 1000 successive accouchements with but a single death," I fully agree with him that we should strive, but as to the institution with which I am connected I am pretty sure we will never reach the goal. Maternity Hospital forming, as a matter of fact, only a department of Charity Hospital, in which all diseases and injuries are treated, and being under the special supervision of men largely engaged in general practice, there is always great danger of infection being brought to it by doctors, nurses, clergymen, helpers, and other officials. Then in the Maternity, of Paris, as in all European lying-in institutions, there are one man permanently at the head of the institution, and clinical assistants, who occupy their positions for years, and who often are themselves obstetricians. In the New York Maternity four men alternate as visiting obstetrical surgeons, and every six weeks we have a new house surgeon, whose whole experience consists in having been junior and senior assistant, six weeks in either capacity. Under such unfavorable circumstances, and with so divided a responsibility, it is very unlikely that Tarnier himself would obtain results similar to those he obtained in his securely secluded and scrupulously guarded Maternity of Paris.

I do not think that "our greater wealth, and the superior physical and mental condition of our populace, as compared with the peasantry of Europe," will help us any; nay, I incline to the opposite view. I do not admit that our women are physically stronger than a European peasant girl, quite the contrary; their greater wealth, and their higher mental development, make them much more delicate, and deprive them of that wonderful power of resistance which, in my opinion—of course, together with antiseptic precautions—renders possible the marvellous results obtained in several of the European lying-in hospitals.

H. J. GARRIGUES, M.D.,
Professor of Practical Obstetrics in the
N Y. Post-Graduate Medical School and Hospital.
NEW YORK, March 21, 1887

NEWS ITEMS.

REGULATIONS OF THE GEORGIA BOARD OF HEALTH REGARDING CADAVERA FOR DISSECTION.—After the usual regulations giving such material to Medical Colleges the following is added:

No body of a stranger or traveller dying suddenly in the State shall be so delivered, but buried at public expense.

Bodies are to be divided in proportion to the number of *bona fide* students.

After a body has been received *it must be embalmed and kept untouched by the knife for a period of sixty days, during which time any relative or person otherwise interested may claim it and have it delivered to him properly prepared for burial.* After this length of time, sixty days, the body, if not before claimed, may be used for dissection, and after use must be properly interred.

For the faithful carrying out of these provisions a bond of $5000 is required from each college.

It is made a felony, punishable by imprisonment for from one to ten years in the penitentiary, for any one to sell or buy such bodies, or to convey them out of the State for the purpose of selling. Robbing a grave, or receiving a body known to have been so disinterred is made liable to the same penalty.—*New Orleans Medical and Surgical Journal*, March, 1887.

PASTEUR'S INOCULATIONS IN THE LABORATORY OF CANTANI AT NAPLES.—In September, 1886, a regular service was established for the practice of Pasteur's treatment of hydrophobia. Up to January 17, 1887, 79 persons had been registered, of whom 7 had been bitten by non-rabid animals. 52 have been treated and discharged, 18 remain still under treatment. The rabidity of the animals which had bitten 18 of the patients treated and discharged, was proven by inoculation with preparations made from their tissues; in the cases of 34 of those discharged as cured the rabidity of the animal was attested by outside physicians.—*Deutsche medicinische Wochenschrift*, February 10, 1887.

VENT, NOT VENTILATION.—In the course of an address on "The Laws of Nature in Relation to Health," given before the Hertfordshire Natural History Society, Professor Attfield, F.R.S., in speaking of the prevention of infectious disease, said a possibly serious source of contamination of the air of towns was to be found in the delivery of foul vapors from certain of the gratings at our feet as we walked along the streets and roads. There was, he observed, a general impression—probably a right one—that we had gone too far in the matter of sewer-ventilation—a little too far in a wrong direction. Fifty and a hundred years ago certain fevers which decimated the inhabitants of our towns were said to be, and probably were, largely due to the emanations from open urban ditches and other collections of impurities. We had now filled up the unsightly conduits, got rid of pestilential accumulations, and had substituted closed pipes and drains. But now, under some fancy that these tubular channels needed ventilating, we adopted mechanical contrivances which often brought the noisome vapors to the feet of adults or children as they played near or perhaps actually peered into the grid-guarded caverns. True, the contents of the passages were not allowed to stagnate as in old days, but so far as we ventilated them—that is, washed them out with air—and brought that possibly pestilential air to the lungs of human beings, to that extent, Professor Attfield contended, we were making a retrograde movement toward the fever-breeding conditions of pre-sanitary times. To prevent the vapor-laden air being driven by great pressure within the drains past the water-traps of our homes into the rooms in which we lived, he would suggest some judiciously disposed vent-pipes with no such current of air through them as constituted true ventilation, kept clear by an annual or semi-annual inspection. There was no danger to be apprehended from the generation of poisonous gas in these sullied-water passages. Such small quantity of gas as would be present even in stagnant stuff would be harmless. Ground level gratings should be done away with altogether; what is required is vent, not ventilation.

CASTRATION OF CRIMINALS.—The following is the recommendation of an enthusiastic sociologist who proposes castration as a means of limiting crime. The

good effects of this kind of punishment upon the criminal class would be fourfold:

1. No offspring with an inherited tendency to commit crime.

2. An added terror to the punishment inflicted for breaking the laws.

3. A gradual improvement in time of the morals of the public at large, and

4. An improvement in the disposition of the person operated upon.

WOMEN DENTISTS IN ENGLAND.—The Committee of the National Dental Hospital have resolved to admit registered female medical students to the practice of the hospital; moreover, we find upon looking through the *Dental Register*, which is issued by the Medical Council, the names of twenty-two women, sixteen of whom are practising in England, two in Scotland, and four in the colonies. All these are registered on the ground of being in practice before the passing of the Dentists' Act. The College of Surgeons of Edinburgh have also decided to admit women to the examination for the licence in dental surgery, but we believe, so far, none have applied. The question arises, Are women fit to be dentists? A great deal has been written and said recently about the ill effects of those occupations for women which necessitate long-continued standing, and how much worse it must be when to the standing is added the strained and cramped position necessitated in stopping, which takes up the greatest part of the time of the dentist of the present day. That the long-continued confined position is a severe strain is shown by the occasional occurrence of neuralgia of the anterior crural or external cutaneous nerves of the leg, which is known by the name of "the dentist's leg." We think that women must often fail in extracting teeth from sheer want of muscular power. Again, in mechanical ideas women are particularly wanting; a fact, perhaps, due to their training, but nevertheless a fact; and in what department of dentistry does not mechanics play a large part?—*Lancet*, February 26, 1887.

A HORN GROWING FROM THE HUMAN HEAD.—An interesting addition has just been made to the Museum of the Hôpital Saint Louis, in Paris, in the shape of a strong and solid horn, which has been surgically removed from the head of a woman residing at Hyères, in the Riviera. This appendage grew from the scalp, was twenty-one centimetres (eight inches) long, and in appearance and consistence resembles the horn of a goat. This deformity is rare, but not so much so as is generally imagined. Cloquet, the eminent anatomist, records a case; and Demarquay has collected fifty-nine cases. The late Sir Erasmus Wilson gives a very complete account of the deformity in the 27th volume of the *Transactions of the Royal Medical and Chirurgical Society*. Out of 90 cases mentioned therein 44 were in females, 39 in males, and the sex of 7 is unrecorded. In the *New York Medical Repository* of 1820 is described the case of a man from whose forehead grew a horn which had three branches and was fourteen inches in circumference. These growths have their origin in a diseased sebaceous gland: and their treatment is removal. It is necessary to destroy all remains of the offending sebaceous gland, or recurrence may happen. —*Dublin Medical Journal*, March, 1887.

THE ETIOLOGY OF FOGS.—MR. JOHN AITKEN'S theory of fogs is gaining credence, and it is certainly one that has much to recommend it. There can be no question that it covers the ground better than any other. As our readers are aware, Mr. Aitken attributes the production of mists, fogs, and rain to the presence of particles of solid matter in the atmosphere. Professor Tyndall was the first to demonstrate how the atmosphere could be filtered, and to show it in a comparatively pure state. Mr. Aitken is of opinion that water vapor clings to and condenses on these particles, either bringing them down as rain, or remaining suspended with them as mist or fog. Chloride of sodium derived from the sea is the most extensive fog producer, but sulphur is the common base of town fogs; and he suggests that it is well that it should be so, because the sulphur has an antiseptic effect on the stagnant air, and saves us from worse evils than fog. This is good news to the sufferers from an annoyance which, if the theory broached be true, cannot possibly be got rid of. There is no special cause of uneasiness as to the sulphur fogs, and, on the whole, they are blessings in thick disguise. We may therefore go on throwing our three hundred and forty-seven tons of sulphur in the air every winter's day in London, not only with impunity, but with something of a sanitary pride in the achievement, because, if we did not thus disinfect the stagnant atmosphere, matters might be worse with us than they are at present. All the same, if we strained our smoke a little so as to get rid of the dirty carbon, it would be more cleanly, and altogether better for us.—*Lancet*, February 26, 1887.

NOTES AND QUERIES.

STEATITE.

In THE MEDICAL NEWS of March 12th, on page 308, a formula for "A New Dentrifice," calls for steatite. What is the ingredient "steatite?" INQUIRER.

By steatite is probably meant what is known in this country as French chalk.—ED.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 15 TO MARCH 21, 1887.

GRAY, WM. W., *Captain and Assistant Surgeon.*—Leave of absence further extended two months. — *S. O. 62, A. G. O.*, March 17, 1887.

POINDEXTER, JEFFERSON D., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered for temporary duty at U. S. Military Academy, West Point, N. Y., relieving Captain Richard W. Johnson, Assistant Surgeon, who will return to his proper station (Fort Adams, R. I.).—*S. O. 62, A. G. O.*, March 17, 1887.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 19, 1887.

PARKER, J. B., *First Surgeon.*—Ordered to the U. S. Steamer "Ossipee."

SIEGFRIED, C. A., *Second Surgeon.*—Ordered to Baltimore, Md., on special duty.

HUGG, JOSEPH, *Third Surgeon.*—Placed on retired list, March 17, 1887.